Appendix E

A Complete Set of Maps and Descriptions for the CAKN Vegetation Monitoring Plots within Denali National Park

Vegetation Monitoring Protocol

Version 1.0

Central Alaska Network Monitoring Program
National Park Service, U.S. Department of the Interior

Table 1. The Summit mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Summit
10 km point ID #	134
USGS quadrangle	HEALY B-5
Lat/Long of SE corner (point #1)	63.374287 N, -149.0330203 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Parks Highway south of Cantwell, can cross the Cantwell Creek on the railroad bridge
Phenology category	Mid- late season
Maximum topographic relief	549 m (1800 ft)
Water source for crew	Creek in grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	The southern row of this grid is outside the Park Boundary. Before accessing this mini-grid crew should consult a land status map and make an effort not to trespass onto private lands. Travel within the grid is on moderate to steep terrain which will slow travel times between points.
Any additional logistical support required?	Get help packing in equipment and camping gear from the backcountry staff.

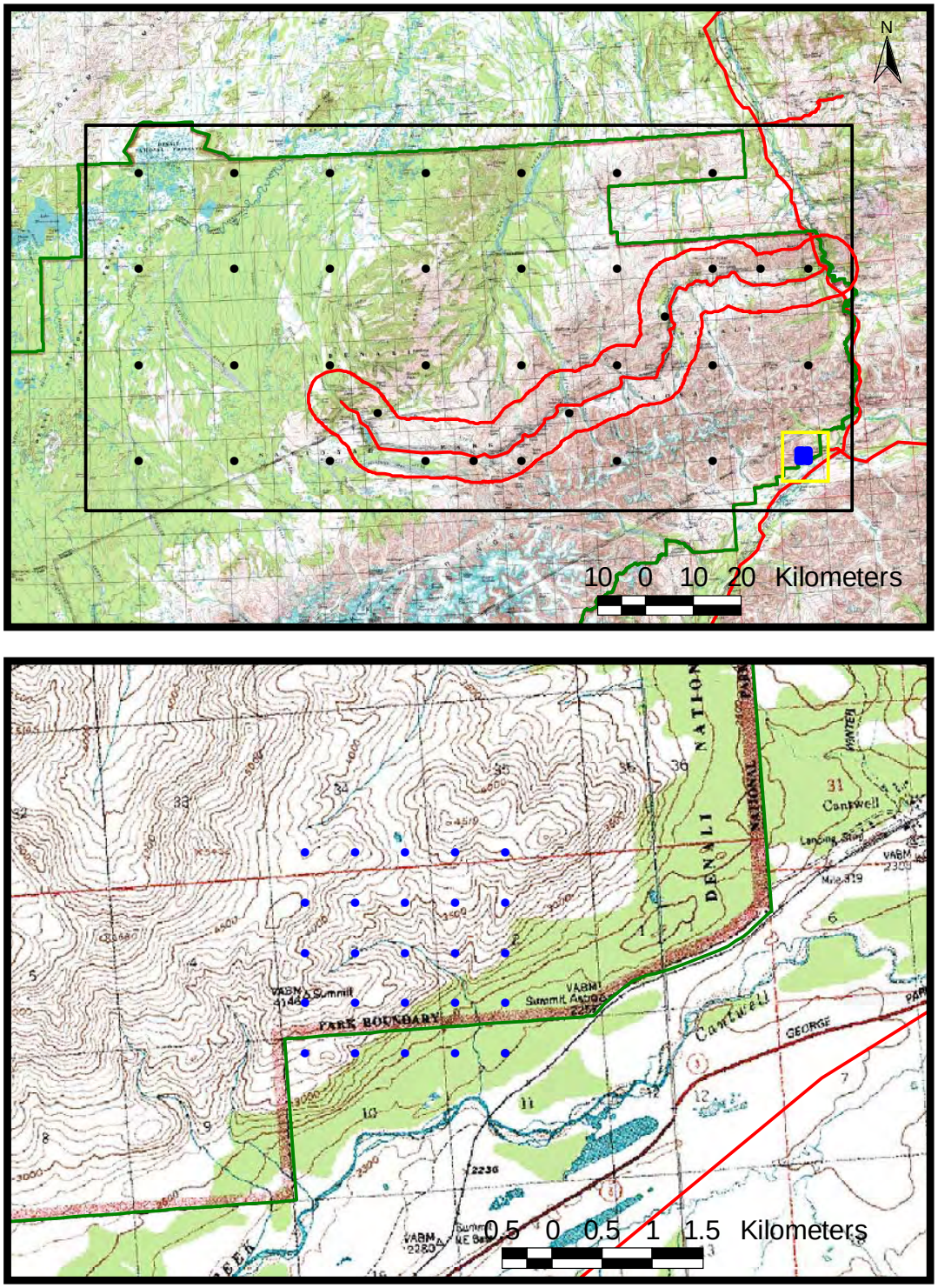

Figure 1. Location of the Summit Mini-grid.

Table 2. The East Fork Bull River mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	East Fork Bull River
10 km point ID #	136
USGS quadrangle	HEALY B-5
Lat/Long of SE corner (point #1)	63.3871255 N, -149.4327971 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters; or "Igloo" on parks Highway.
Phenology category	Mid season; alpine on the south side
Maximum topographic relief	396 m (1300 ft)
Water source for crew	Several streams in grid
Potential camping limitations	Some steep terrain may reduce potential camp areas
Travel or logistical concerns within mini-grid	Some areas are steep, mountainous terrain may make hiking times between points difficult or treacherous, and thus require more time.
Any additional logistical support required?	No

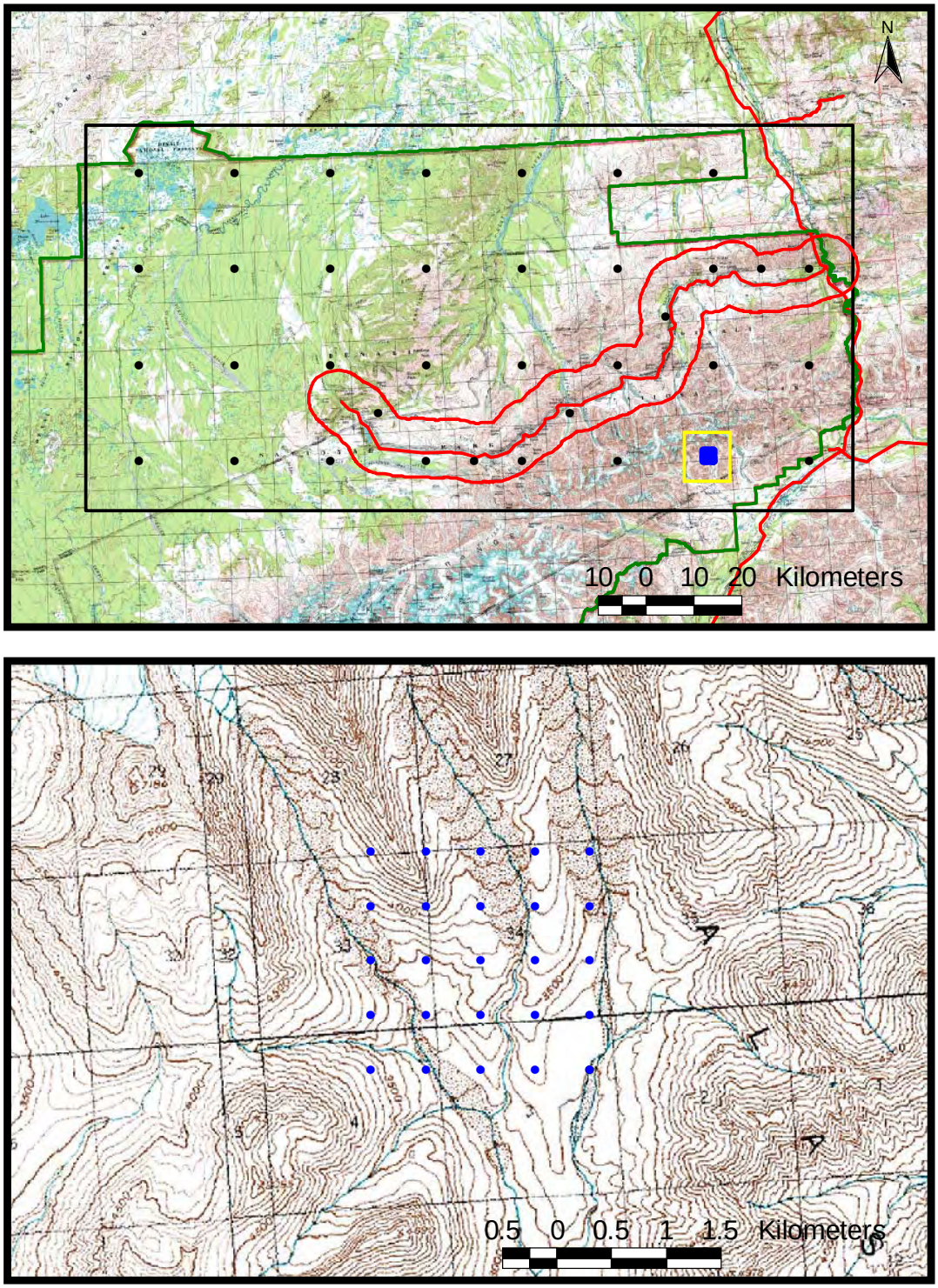

Figure 2. Location of the East Fork Bull River Mini-grid.

Table 3. The Mt. Pendleton inaccessible mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Mount Pendleton (inaccessible)
10 km point ID #	138
USGS quadrangle	HEALY B-6
Lat/Long of SE corner (point #1)	63.3988887 N, -149.8329056 W
Vegetation sampling schedule	
Sampling category	20 km permanent grid
Possible access methods	Not accessible – glaciers and ultra-steep terrain.
Access point (any numbers correspond with possible access methods)	N/A
Phenology category	
Maximum topographic relief	
Water source for crew	
Potential camping limitations	
Travel or logistical concerns within mini-grid	This grid is steep with vertical terrain and glaciers. It is not feasible to sample. If deglaciation occurs, we may include this grid, although the terrain may remain prohibitively steep.
Any additional logistical support required?	No

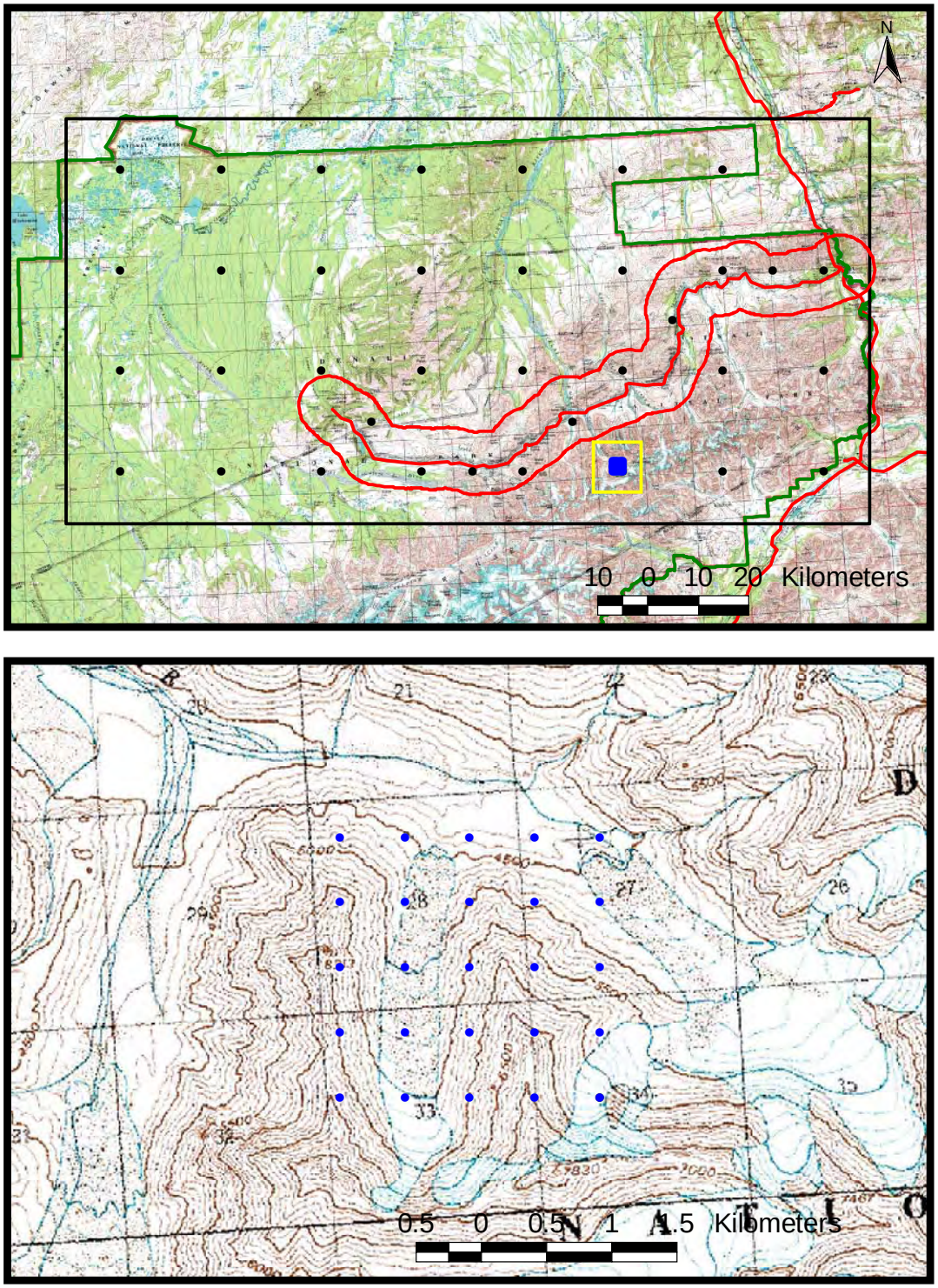

Figure 3. Location of the Mt Pendleton inaccessible Mini-grid.

Table 4. The Gorge Creek mini-grid point for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Gorge Creek
10 km point ID #	140
USGS quadrangle	MT MCKINLEY B-1
Lat/Long of SE corner (point #1)	63.4095752 N, -150.2333173 W
Vegetation sampling schedule	Sampled in 2002
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Park Road
Phenology category	Mid- season
Maximum topographic relief	549 m (1800 ft)
Water source for crew	Gorge Creek. There are several creeks and water will not be a problem
Potential camping limitations	Camping out of view of the Park Road is a concern
Travel or logistical concerns within mini-grid	Some areas are very steep and some points are inaccessible
Any additional logistical support required?	No

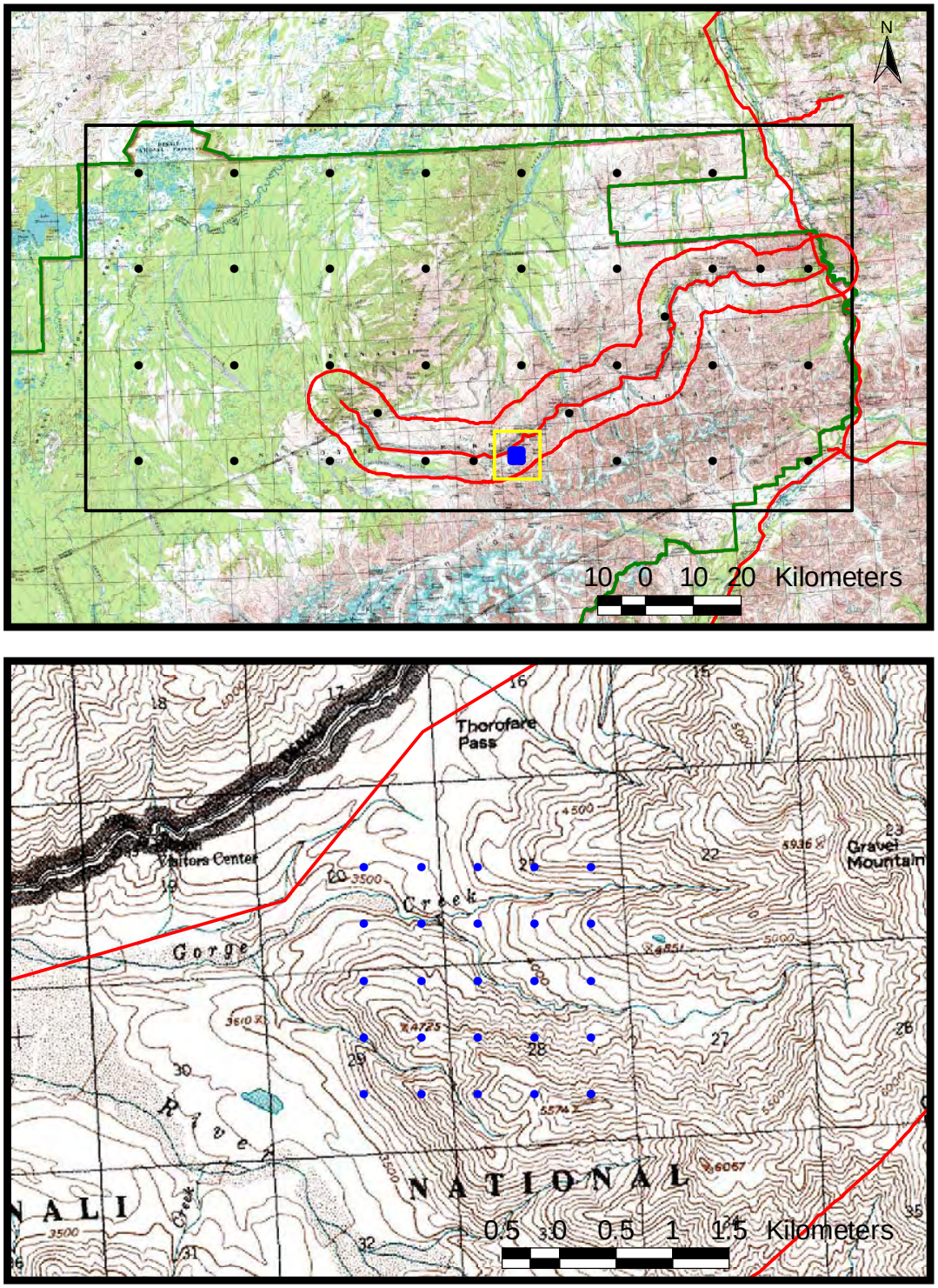

Figure 4. Location of the Gorge Creek Mini-grid.

Table 5. The Lower Muldrow Glacier mini-grid point for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Lower Muldrow Glacier
10 km point ID #	141
USGS quadrangle	MT MCKINLEY B-1
Lat/Long of SE corner (point #1)	63.4145143 N, -150.4336278 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Any time during season
Maximum topographic relief	61 m (200 ft)
Water source for crew	Thorofare River in the S part of the grid and wetland areas and ponds in the N part
Potential camping limitations	This grid straddles the park road so camping within the DNP restrictions will be a challenge
Travel or logistical concerns within mini-grid	If water levels in the river are high, part of the grid may be inaccessible
Any additional logistical support required?	No

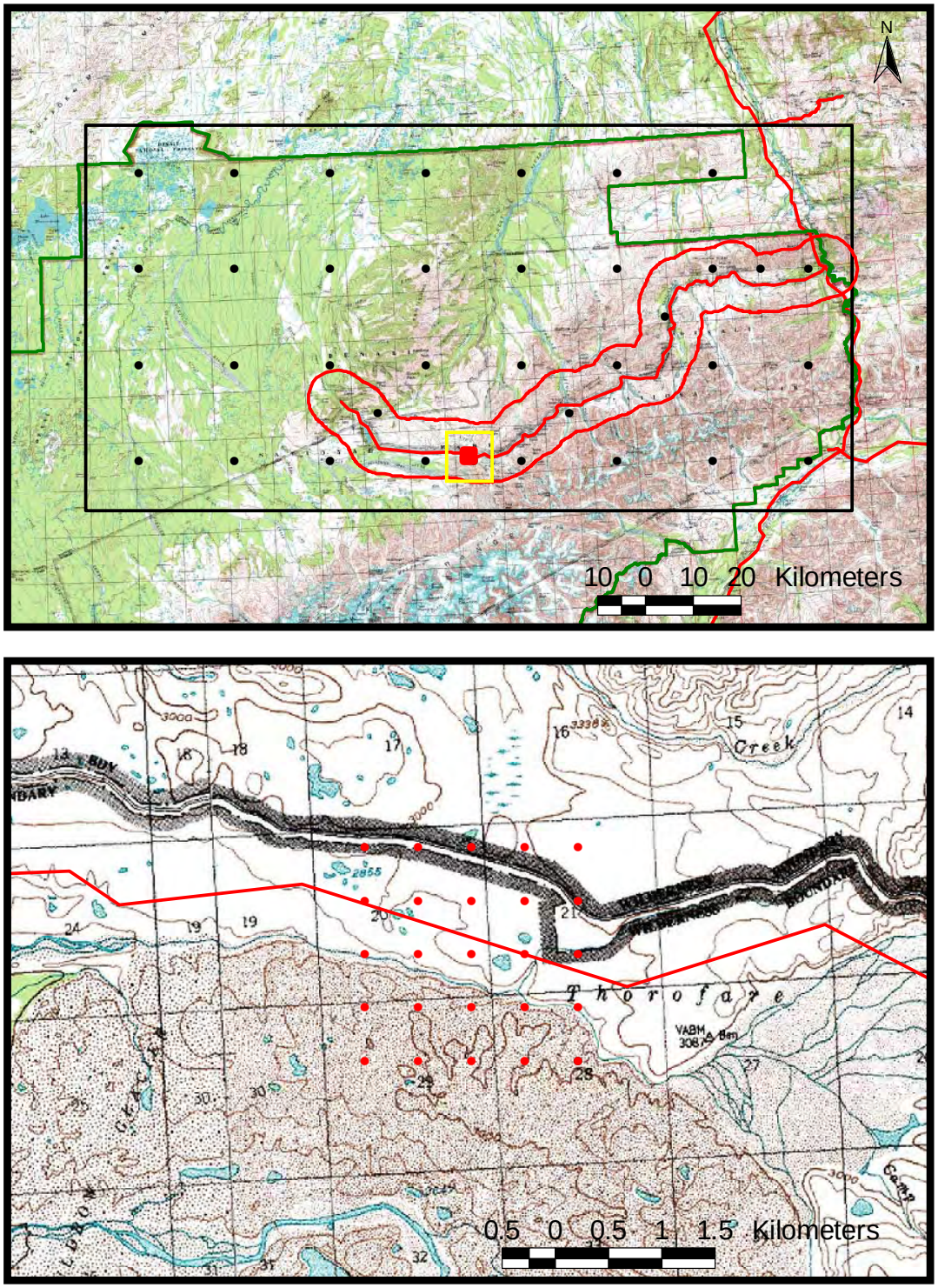

Figure 5. Location of the Lower Muldrow Glacier Mini-grid.

Table 6. The McKinley Bar mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	McKinley Bar
10 km point ID #	142
USGS quadrangle	MT MCKINLEY B-2
Lat/Long of SE corner (point #1)	63.4191838 N, -150.6340033 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Park Road
Phenology category	Early to mid season- low elevation
Maximum topographic relief	122 m (400 ft)
Water source for crew	Streams, ponds and the McKinley River, water will not be a limiting factor in fieldwork
Potential camping limitations	Camping out of view of the Park Road may be an issue
Travel or logistical concerns within mini-grid	None
Any additional logistical support required?	Backcountry rangers to assist with carrying gear to site if possible (it will be about a 2 mile hike)

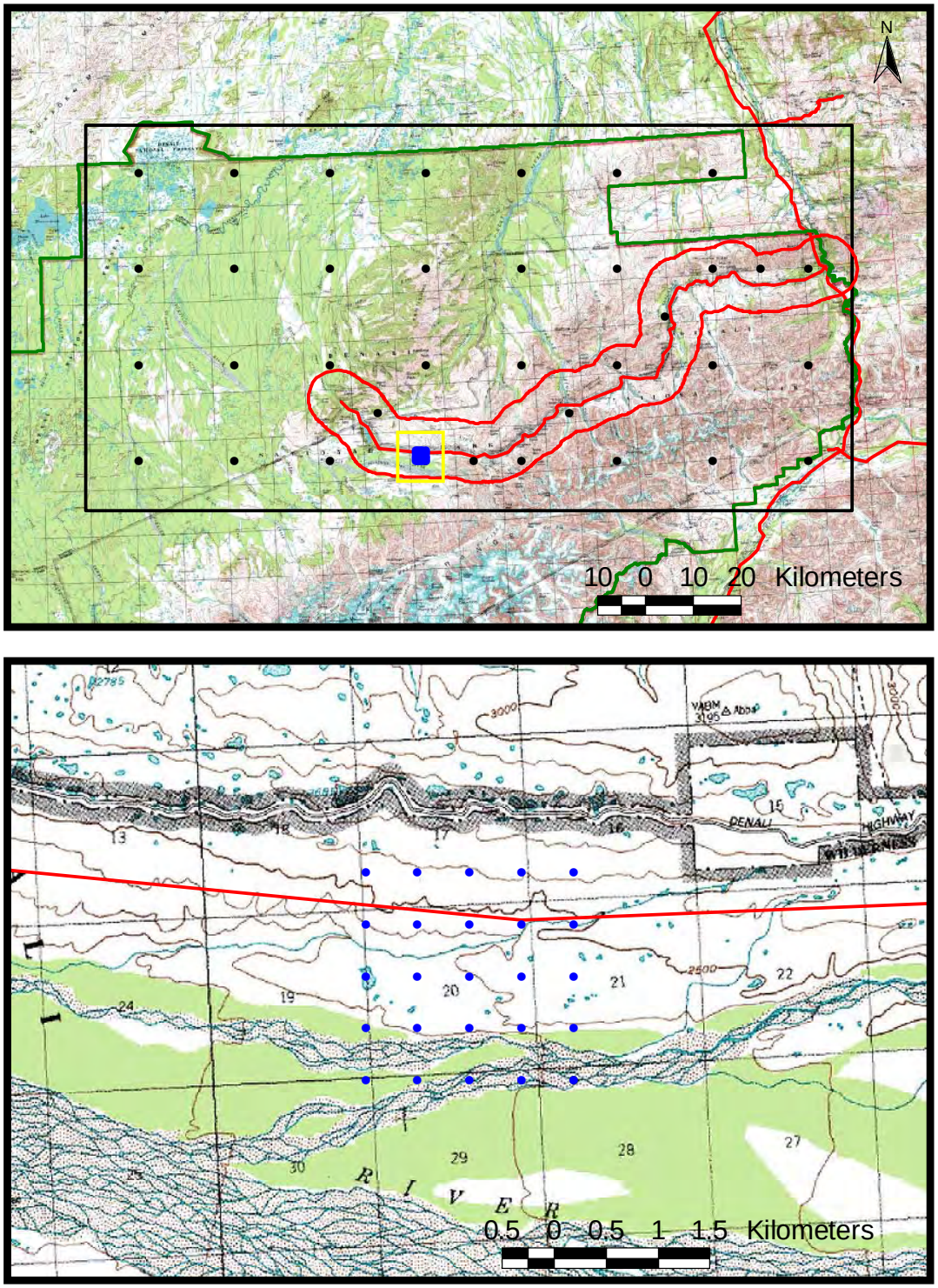

Figure 6. Location of the McKinley Bar Mini-grid.

Table 7. The Wonder Lake mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Wonder Lake
10 km point ID #	143
USGS quadrangle	MT MCKINELY B-2
Lat/Long of SE corner (point #1)	63.4423131 N, -150.8726450
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Early- mid season
Maximum topographic relief	Flat
Water source for crew	McKinley River and surrounding wetland areas
Potential camping limitations	Camping out of view of the Park Road may be a limitation
Travel or logistical concerns within mini-grid	The southernmost row is completely in the river bar, so if water levels are high, crossing the river to access these may not be possible
Any additional logistical support required?	Backcountry support to carry field gear to the grid from the road

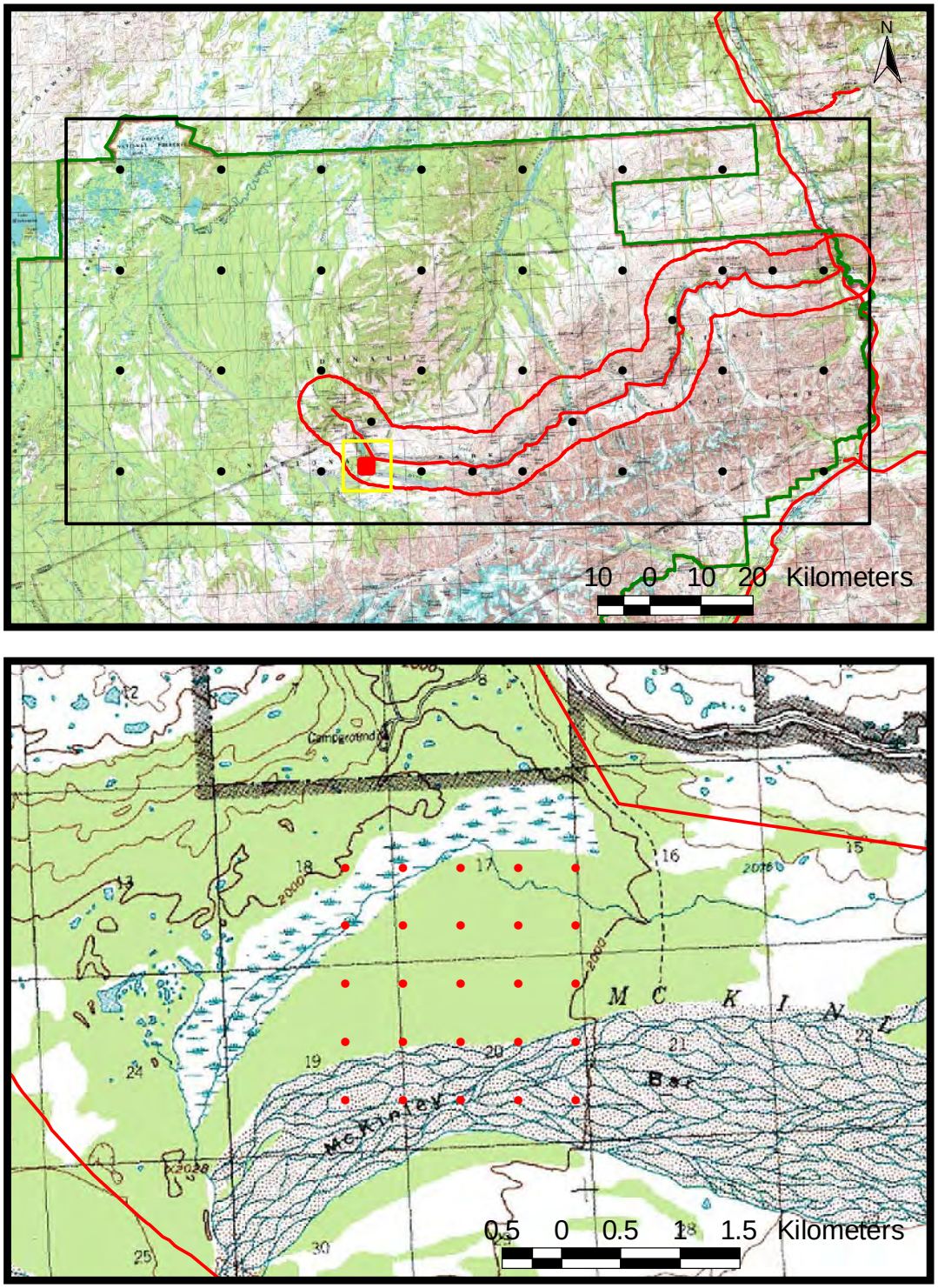

Figure 7. Location of the Wonder Lake Mini-grid.

Table 8. The Muddy River Mouth mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Muddy River Mouth
10 km point ID #	144
USGS quadrangle	MT MCKINLEY B-3
Lat/Long of SE corner (point #1)	63.4277135 N, -151.0349347 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Wonder Lake Campground
Phenology category	Early to mid season- low elevation
Maximum topographic relief	122 m (400 ft)
Water source for crew	McKinley River and numerous small creeks and ponds, water will not constrain the field work
Potential camping limitations	None
Travel or logistical concerns within mini-grid	The point on the S side of the McKinley River requires a river crossing, which may be difficult depending on water depth, ponds and wetland areas may make hiking difficult
Any additional logistical support required?	Backcountry rangers to carry our field supplies will be needed as the hike to this grid is about 6 miles

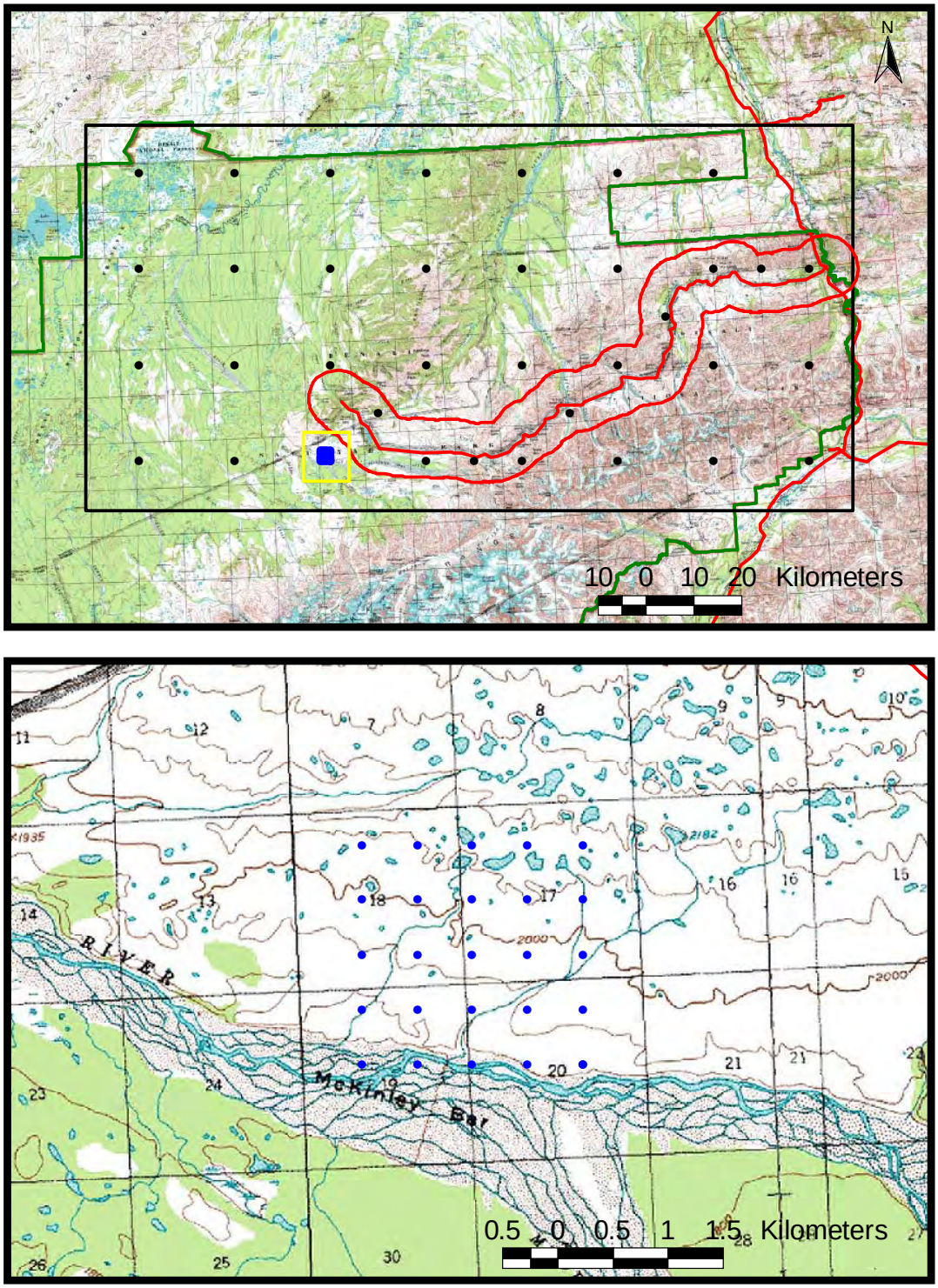

Figure 8. Location of the Muddy River Mouth Mini-grid.

Table 9. The Slippery Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Slippery Creek
10 km point ID #	146
USGS quadrangle	MT MCKINLEY B-3
Lat/Long of SE corner (point #1)	63.4351633 N, -151.4360825 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Any part of season
Maximum topographic relief	61 m (200 ft)
Water source for crew	Numerous ponds and creeks in the grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Wetlands may make travel difficult, it may be necessary to bring hip waders to the grid
Any additional logistical support required?	No

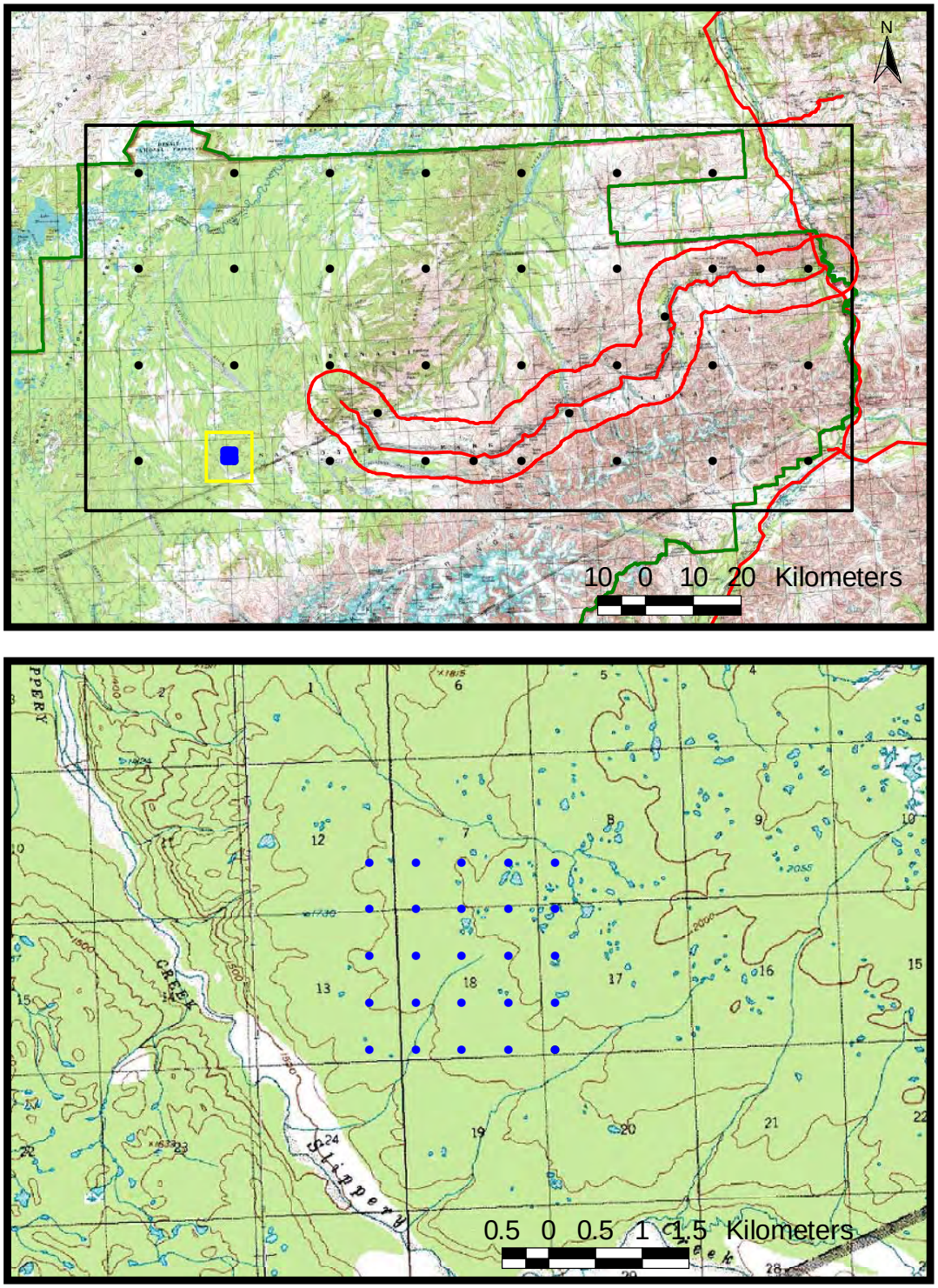

Figure 9. Location of the Slippery Creek Mini-grid.

Table 10. The Hult Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Hult Creek
10 km point ID #	148
USGS quadrangle	MT MCKINLEY B-4
Lat/Long of SE corner (point #1)	63.4415324 N, -151.8374176 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early or late season
Maximum topographic relief	61 m (200 ft)
Water source for crew	Ample supply from Foraker River and Hult Creek
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Foraker River may be a barrier to points in the northwest side of the grid; if water levels are high Hult Creek may be a problem for crossing
Any additional logistical support required?	Small inflatable craft to cross the river if it is deep

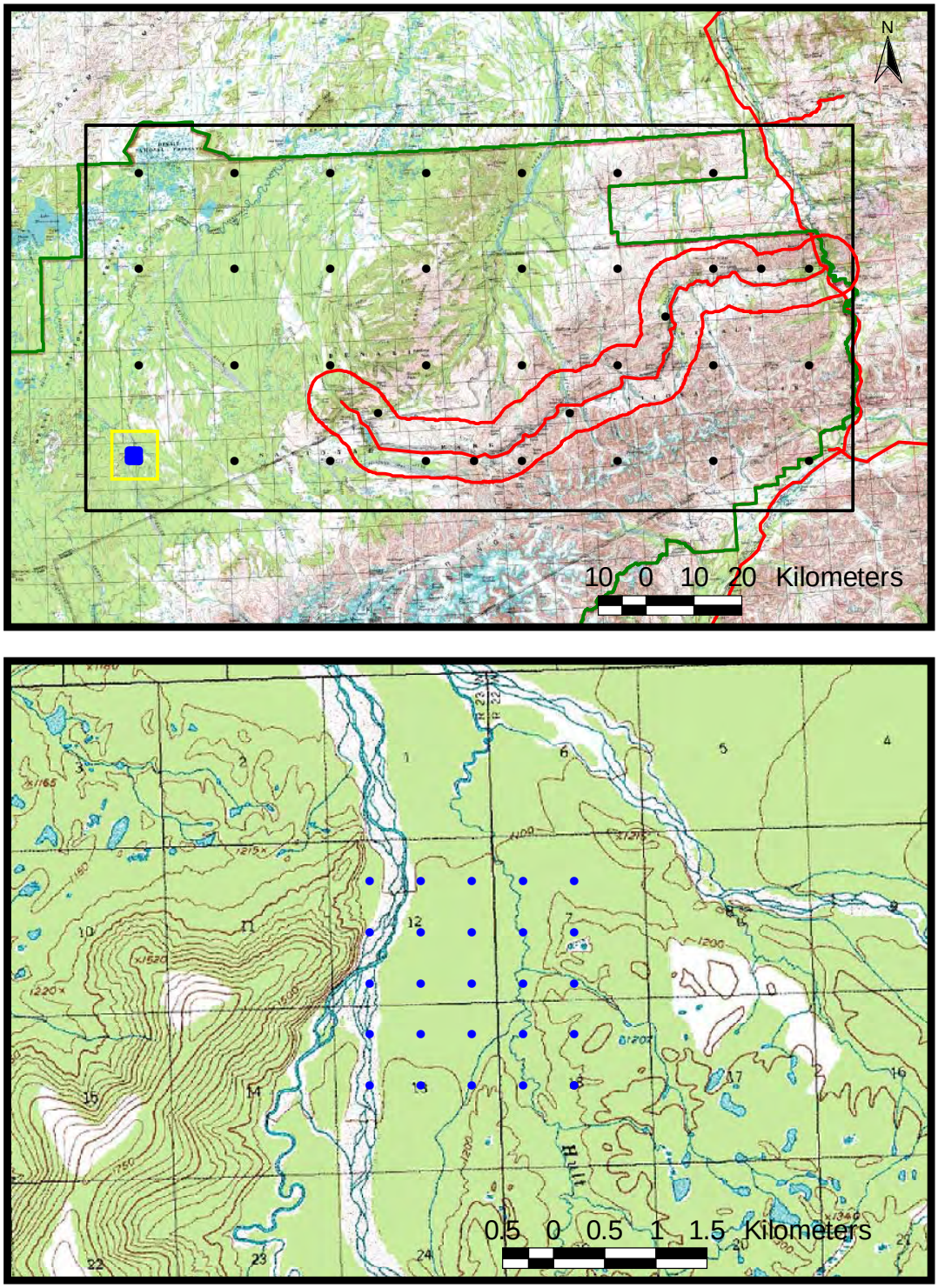

Figure 10. Location of the Hult Creek Mini-grid.

Table 11. The Polychrome Pass mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Polychrome Pass
10 km point ID #	158
USGS quadrangle	HEALY B-6
Lat/Long of SE corner (point #1)	63.4882214 N, -149.8202934 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Mid- late season
Maximum topographic relief	213 m (700 ft)
Water source for crew	Tributaries of the Toklat River from the Polychrome Glacier
Potential camping limitations	Camping out of view of the Road may be difficult
Travel or logistical concerns within mini-grid	If water levels are high, traversing among points in this grid will be difficult
Any additional logistical support required?	Backcountry rangers to assist with hauling field gear to the grid

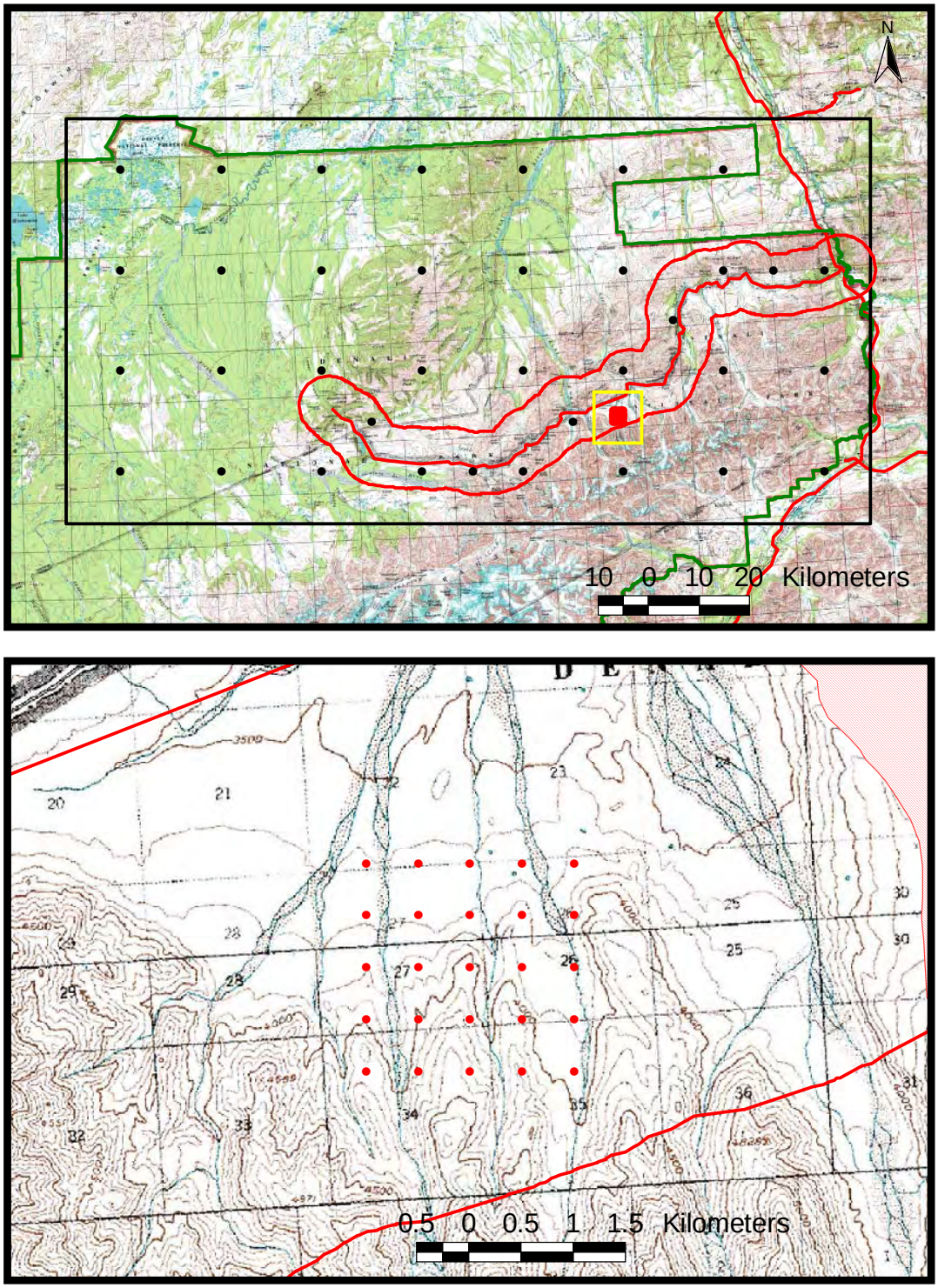

Figure 11. Location of the Polychrome Pass Mini-grid. The red bars in the upper right corner represent a permanent wildlife closure.

Table 12. The Divide Mountain mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Divide Mountain
10 km point ID #	159
USGS quadrangle	MT MCKINLEY B-1
Lat/Long of SE corner (point #1)	63.4937163 N, -150.021066 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Early season
Maximum topographic relief	213 m (700 ft)
Water source for crew	Toklat River- plenty of water available
Potential camping limitations	This grid straddles the road and is in the flat river corridor, therefore camping out of the view of the Park Road may be difficult
Travel or logistical concerns within mini-grid	If the Toklat River is high, crossing the grid may be a huge difficulty
Any additional logistical support required?	No

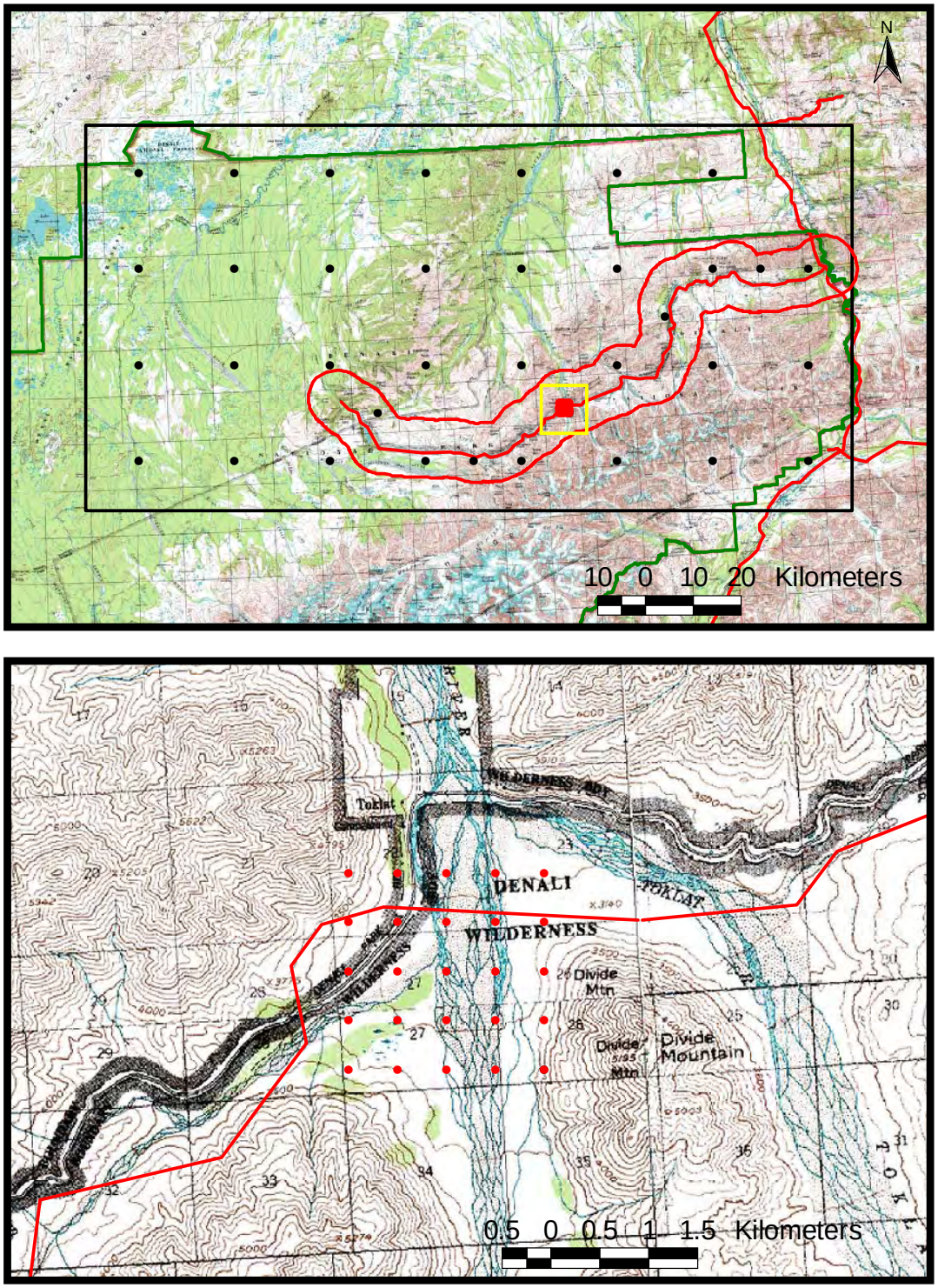

Figure 12. Location of the Divide Mountain Mini-grid.

Table 13. The Upper Stony Creek mini-grid point for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Upper Stony Creek
10 km point ID #	160
USGS quadrangle	MT MCKINLEY B-1
Lat/Long of SE corner (point #1)	63.4989411 N, -150.2219114 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Mid season
Maximum topographic relief	274 m (900 ft)
Water source for crew	Stony Creek
Potential camping limitations	None
Travel or logistical concerns within mini-grid	None
Any additional logistical support required?	Backcountry rangers to assist transporting field gear into this grid

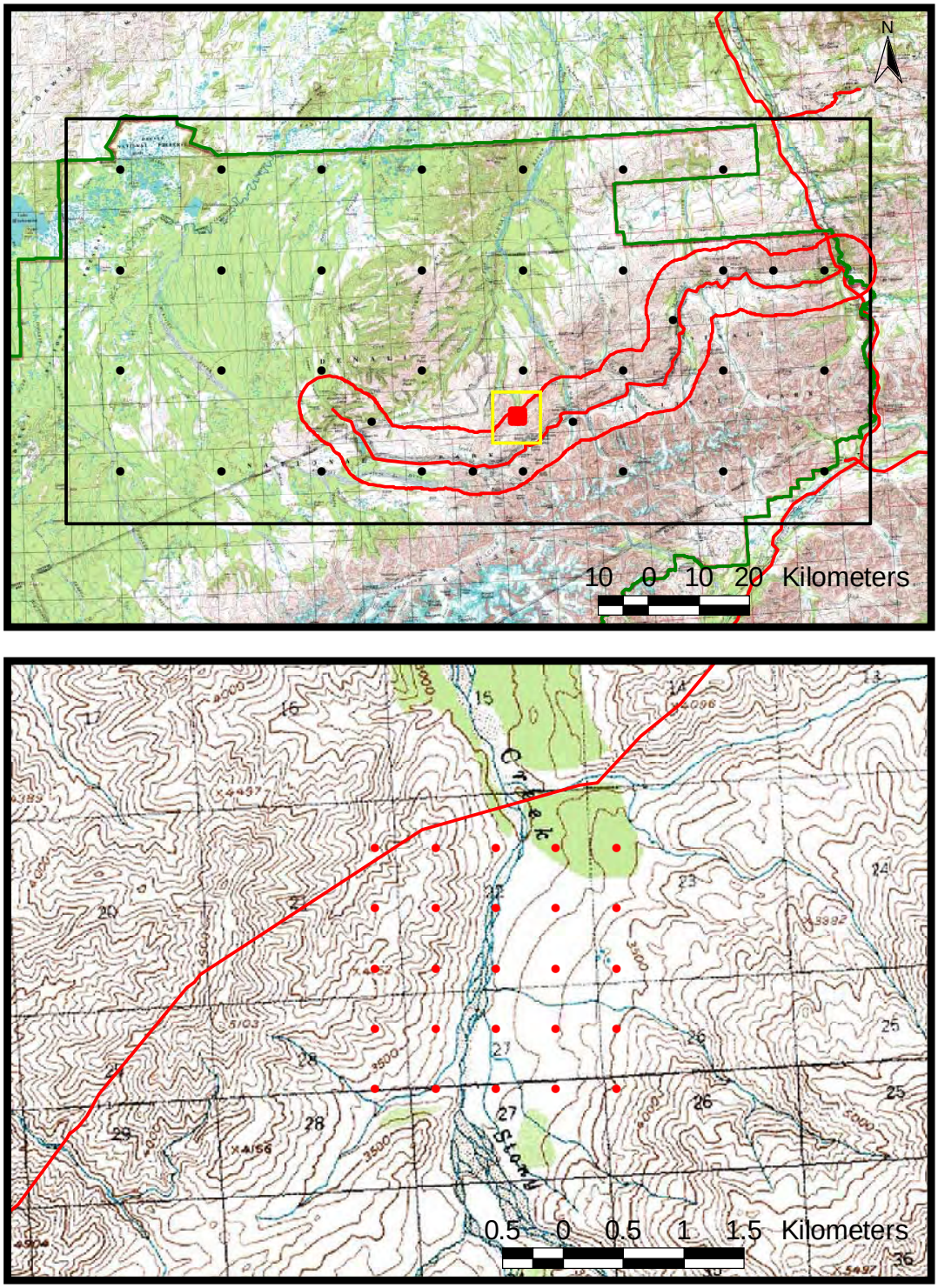

Figure 13. Location of the Upper Stony Creek Mini-grid.

Table 14. The Upper Moose Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Upper Moose Creek
10 km point ID #	163
USGS quadrangle	MT MCKINLEY C-2
Lat/Long of SE corner (point #1)	63.5129931 N, -150.8248485 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road or Camp Denali
Phenology category	Early to mid season
Maximum topographic relief	335 m (1100 ft)
Water source for crew	Moose Creek in the bottom part of the grid
Potential camping limitations	Camping out of view of the road may be a limitation at this grid
Travel or logistical concerns within mini-grid	Moose Creek may be a problem if water levels are high
Any additional logistical support required?	Backcountry rangers to assist carrying in field supplies for the 2 mile trek to the grid

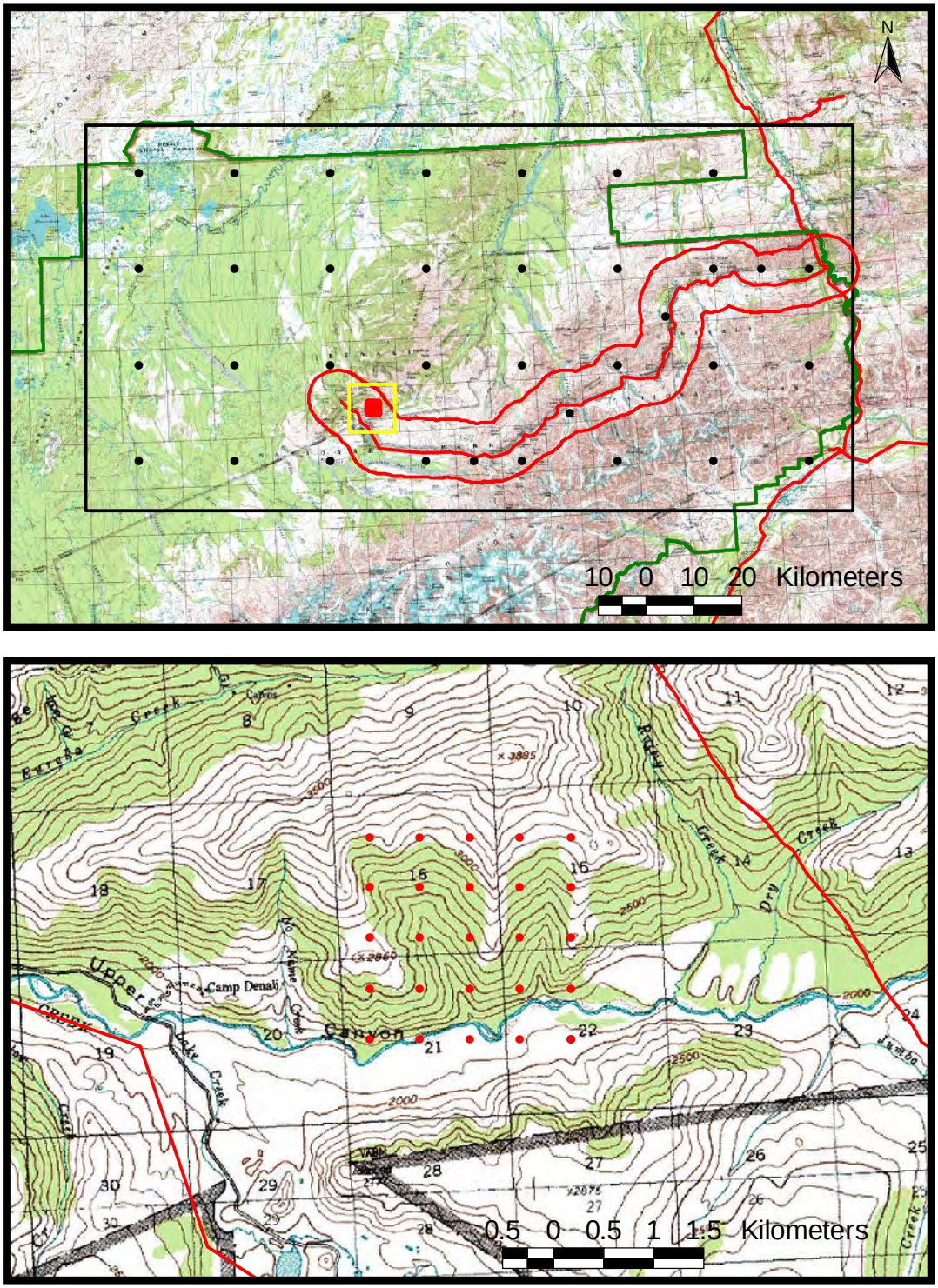

Figure 14. Location of the Upper Moose Creek Mini-grid.

Table 15. The Riley Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Riley Creek
10 km point ID #	175
USGS quadrangle	HEALY C-5
Lat/Long of SE corner (point #1)	63.5528057 N, -149.0028965 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Triple Lakes Trail Head on the Parks Highway
Phenology category	Mid season
Maximum topographic relief	610 m (2000 ft)
Water source for crew	Riley Creek, should not be a problem
Potential camping limitations	Dense brush near Riley Creek and steep terrain in rest of grid
Travel or logistical concerns within mini-grid	Dense brush near Riley Creek and steep terrain in rest of grid may be a problem, also, hiking into this grid will require support from multiple rangers as it is a long trip
Any additional logistical support required?	Backcountry rangers to assist with carrying field equipment

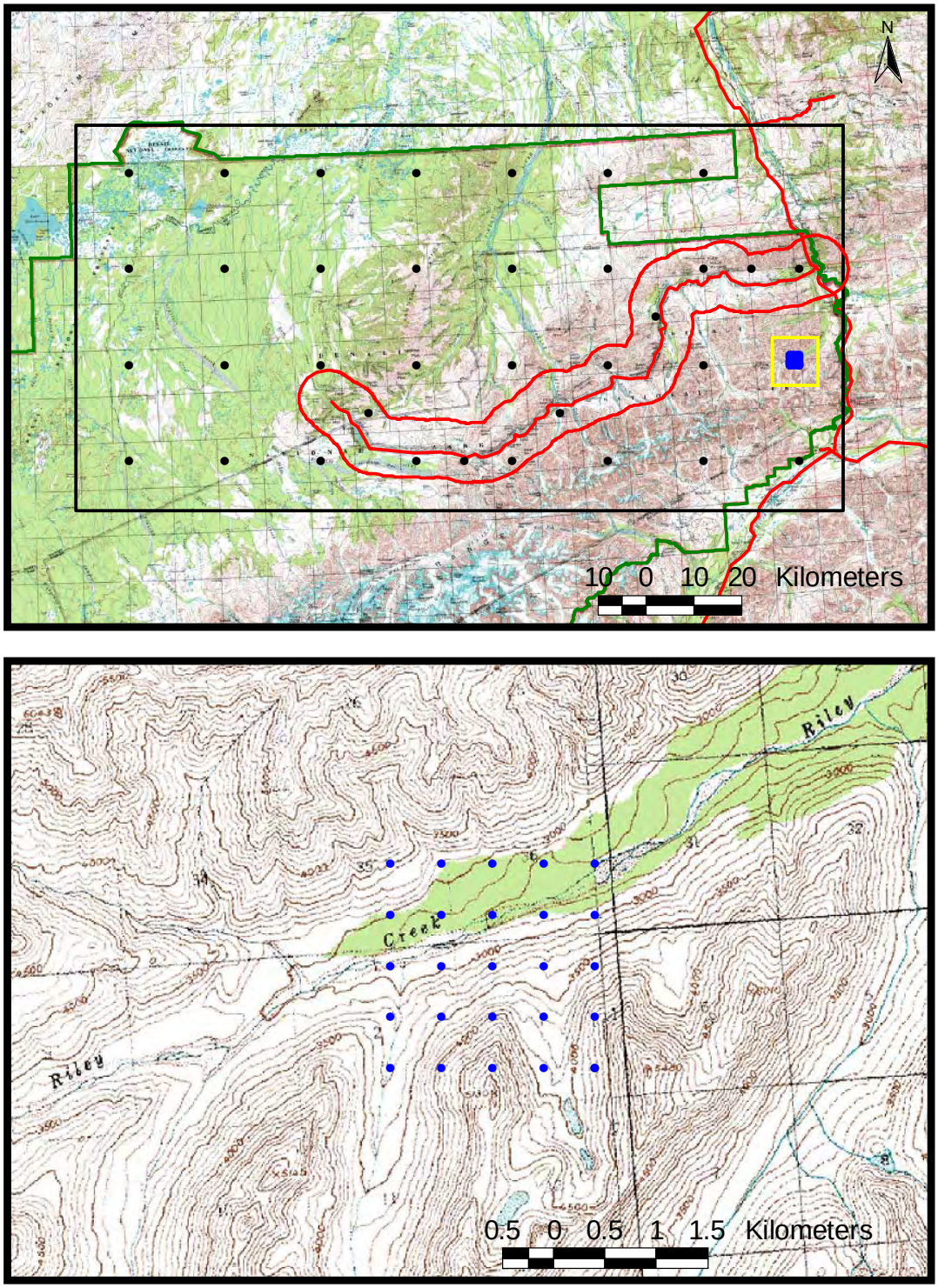

Figure 15. Location of the Riley Creek Mini-grid.

Table 16. The Double Mountain mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Double Mountain
10 km point ID #	177
USGS quadrangle	HEALY C-5
Lat/Long of SE corner (point #1)	63.5657242 N, -149.4050816 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Walk in from Park Road
Access point (any numbers correspond with possible access methods)	Park Road
Phenology category	Mid- late season, high alpine
Maximum topographic relief	762 m (2500 ft)
Water source for crew	Couple creeks in eastern half of grid, water may be a defining issue in successfully sampling this grid within a 10 day period
Potential camping limitations	Steep areas may hinder finding a good spot
Travel or logistical concerns within mini-grid	Steep areas and high elevation may make travel among points difficult or even dangerous
Any additional logistical support required?	Backcountry rangers to assist with transport of field supplies will be essential. A helicopter lift among grid points may facilitate completing this grid within 10 days

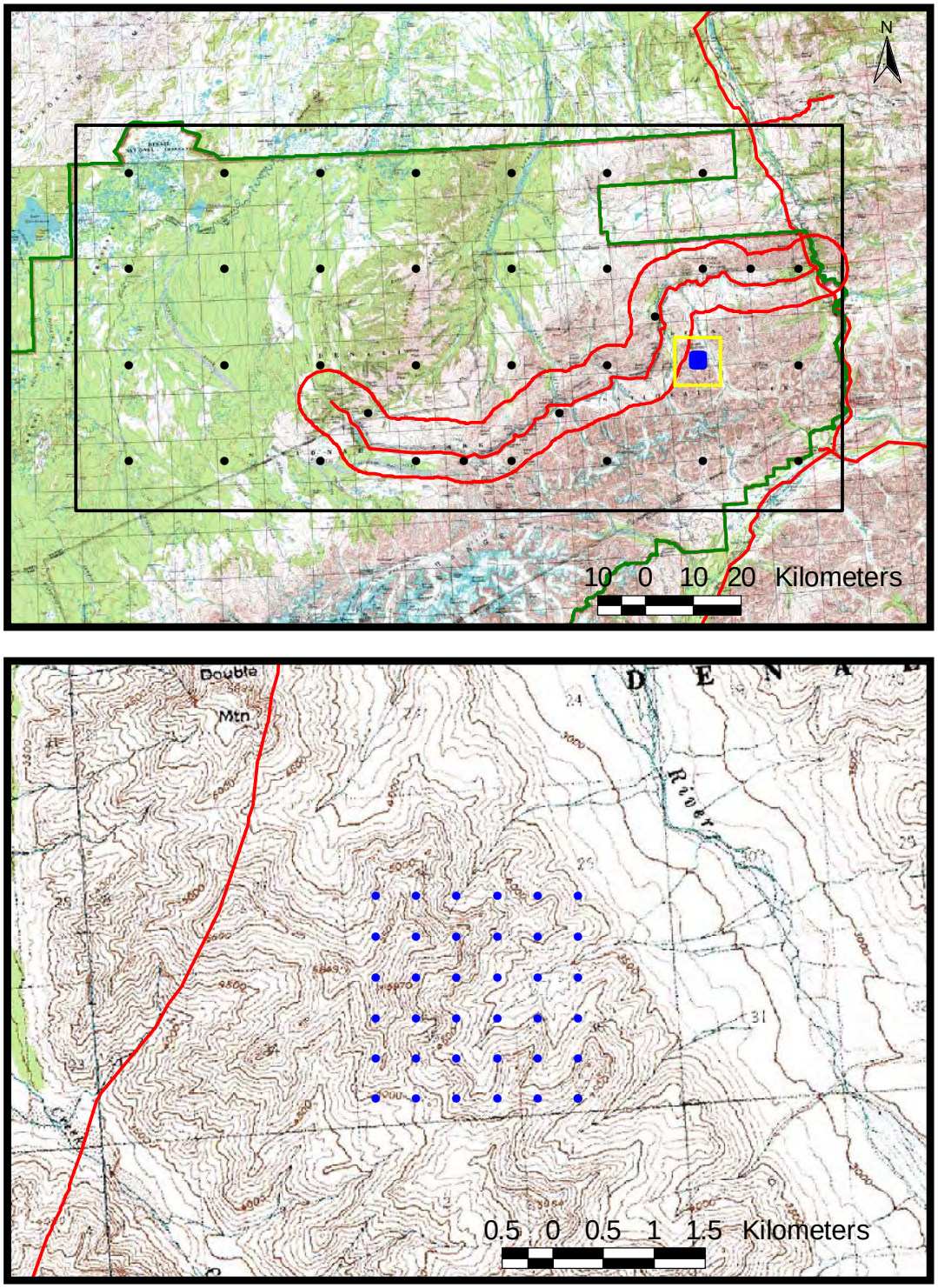

Figure 16. Location of the Double Mountain Mini-grid.

Table 17. The Igloo Canyon mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Igloo Canyon
10 km point ID #	178
USGS quadrangle	HEALY C-6
Lat/Long of SE corner (point #1)	63.5717778 N, -149.6063028 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Mid- late season: alpine terrain
Maximum topographic relief	396 m (1300 ft)
Water source for crew	Several small creeks within grid and Park facilities
Potential camping limitations	The crew will not camp at this grid but will instead stay in Park housing at Igloo
Travel or logistical concerns within mini-grid	Some points in this grid are located in very steep terrain, making hiking safety a concern; also, the mountainous terrain in this entire grid will increase travel times among points
Any additional logistical support required?	No- this grid is best sampled making day trips from the Park facilities at Igloo

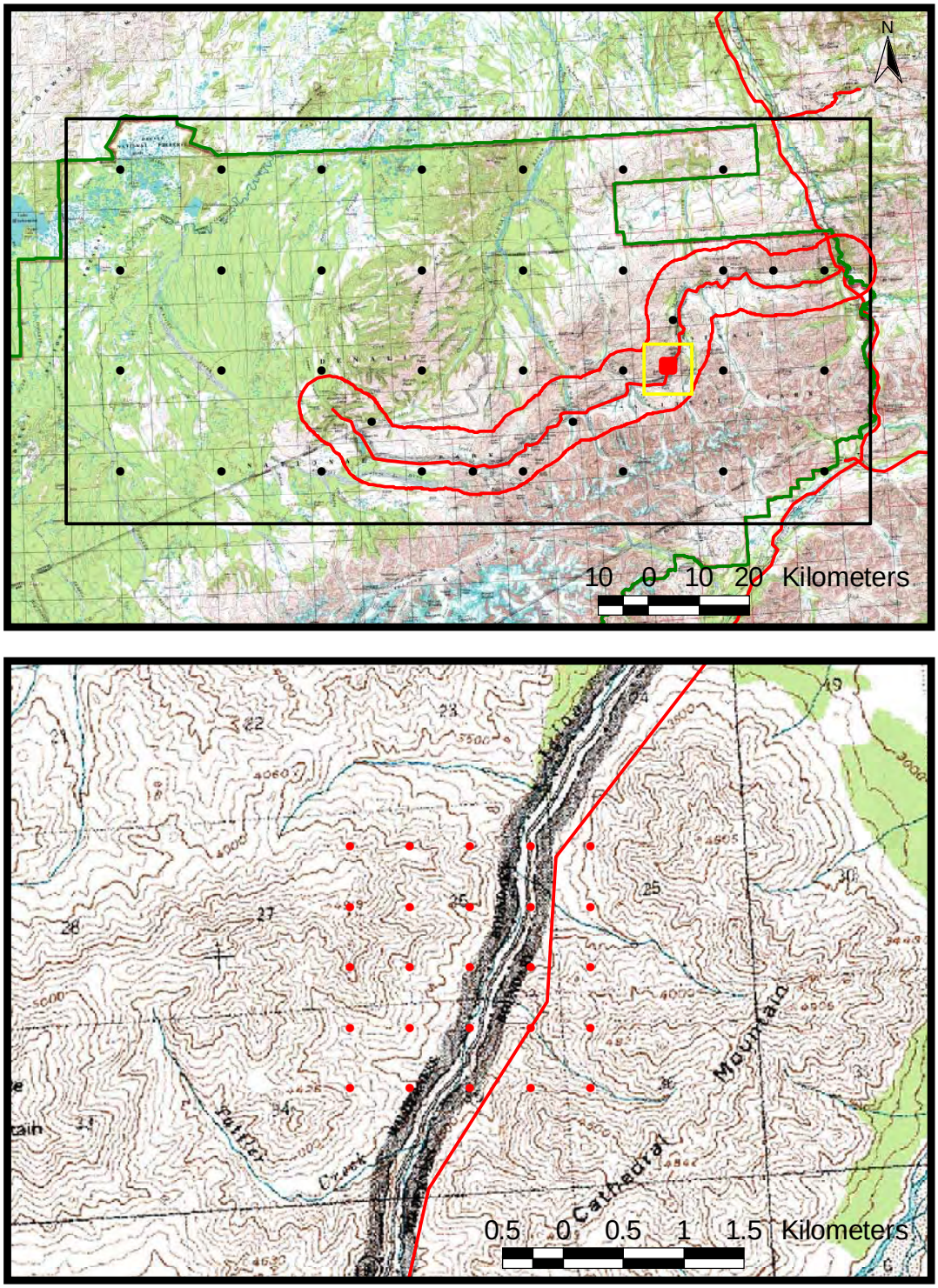

Figure 17. Location of the Igloo Canyon Mini-grid.

Table 18. The Tributary Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Tributary Creek
10 km point ID #	179
USGS quadrangle	HEALY C-6
Lat/Long of SE corner (point #1)	63.5775607 N, -149.8076047 W
Vegetation sampling schedule	Measured in 2003
Sampling category	20 km sampling window – permanent sample
Possible access methods	Hike in from Park Road
Access point (any numbers correspond with possible access methods)	Park Road
Phenology category	Mid-Season
Maximum topographic relief	396 m (1300 ft)
Water source for crew	Toklat River and Tributary Creek
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Several steep sections within the grid, hiking may be more difficult
Any additional logistical support required?	No

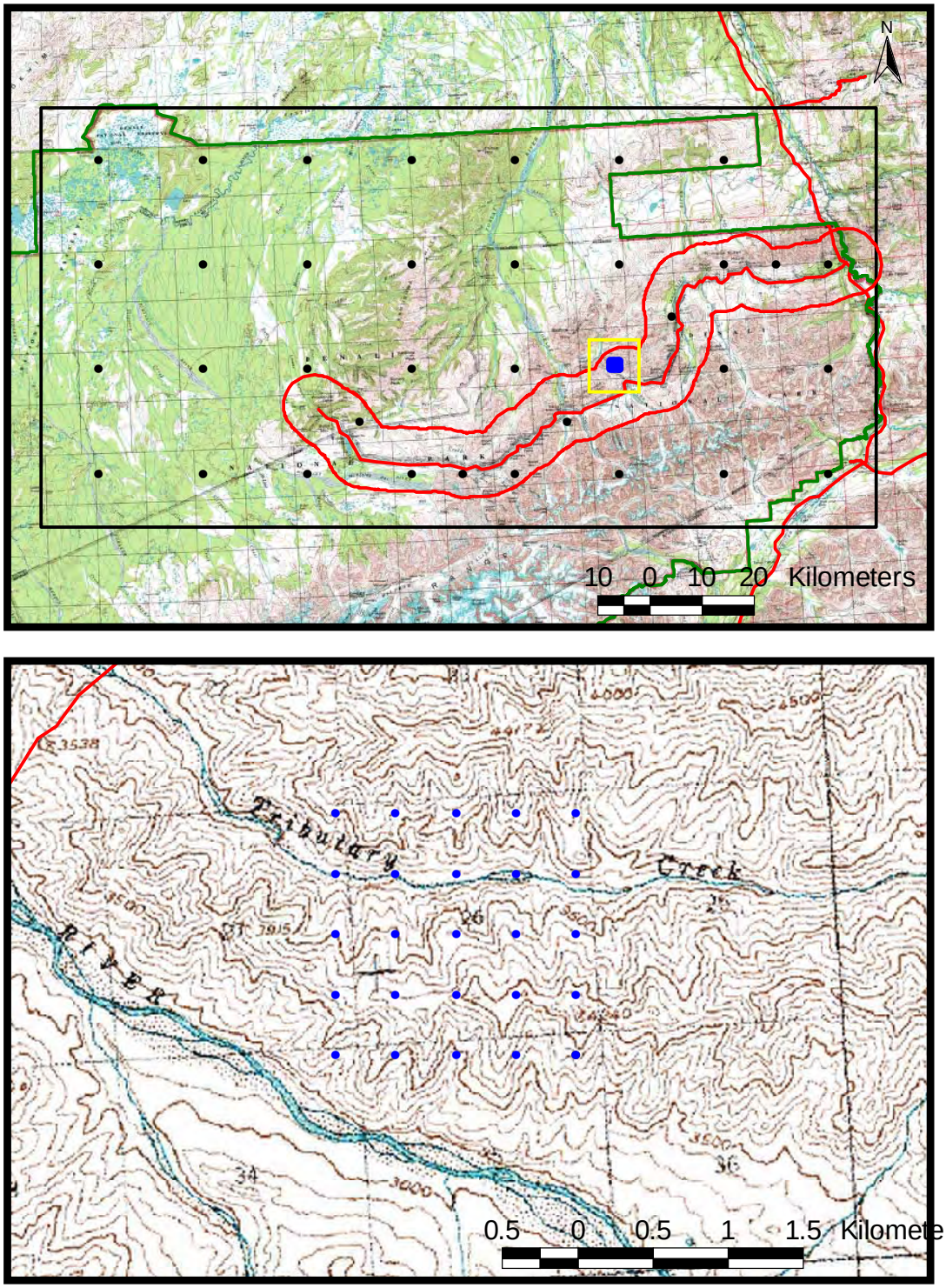

Figure 18. Location of the Tributary Creek Mini-grid.

Table 19. The Lower Stony mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Lower Stony
10 km point ID #	181
USGS quadrangle	MT MCKINLEY C-1
Lat/Long of SE corner (point #1)	63.5883139 N, -150.2104364 W
Vegetation sampling schedule	Measured in 2002
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Early- mid season
Maximum topographic relief	274 m (900 ft)
Water source for crew	Pond and wetland area at base of hill in SE part of grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Some parts, including gully feature are steep, SE part of grid contains wetlands that may hinder travel
Any additional logistical support required?	None

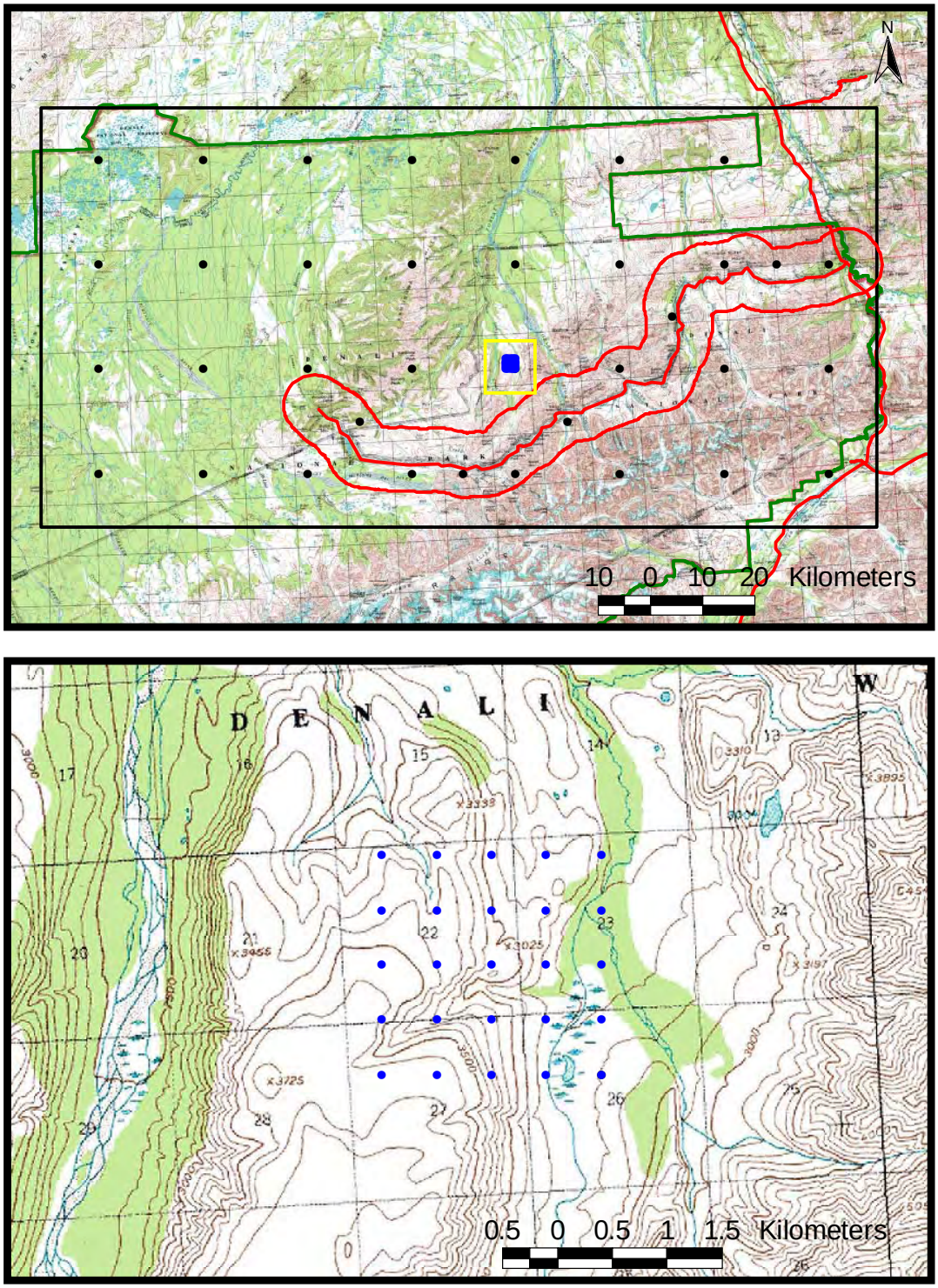

Figure 19. Location of the Lower Stony Mini-grid.

Table 20. The Kankone Peak mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Kankone Peak
10 km point ID #	183
USGS quadrangle	MT MCKINLEY C-2
Lat/Long of SE corner (point #1)	63.5979825 N, -150.6135474 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Mid-season
Maximum topographic relief	396 m (1300 ft)
Water source for crew	Stream in grid but crew should bring their own water to this grid
Potential camping limitations	Steep terrain may be an issue
Travel or logistical concerns within mini-grid	The NW part of the grid has steep terrain
Any additional logistical support required?	No

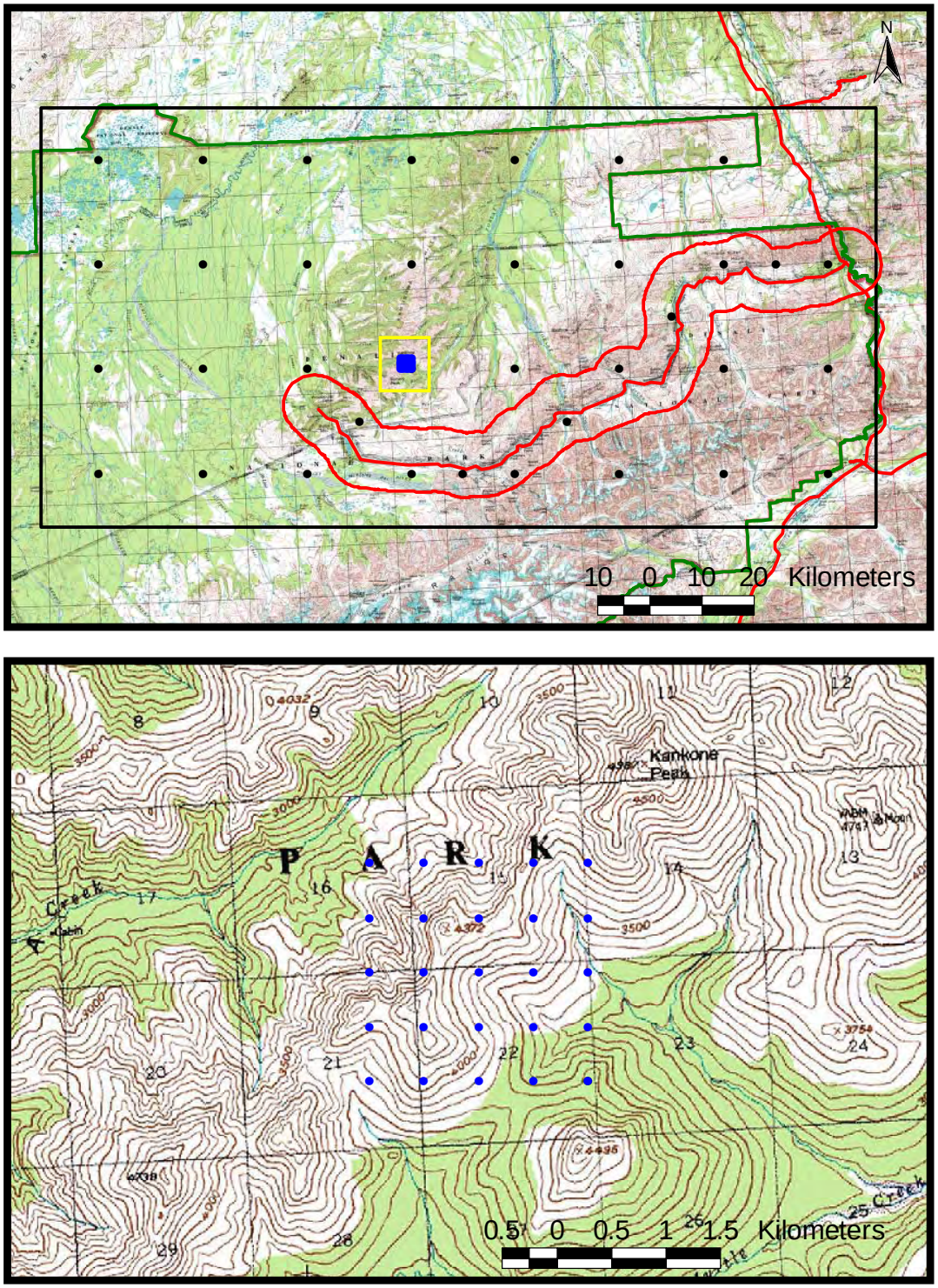

Figure 20. Location of the Kankone Peak Mini-grid.

Table 21. The Outer Moose Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Outer Moose Creek
10 km point ID #	185
USGS quadrangle	MT MCKINLEY C-3
Lat/Long of SE corner (point #1)	63.6065655 N, -151.0169084 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Float in/Helicopter out, or fly both ways
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early or late season
Maximum topographic relief	123 m (400 ft)
Water source for crew	3 creeks within grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Creek crossings may be a difficulty
Any additional logistical support required?	No

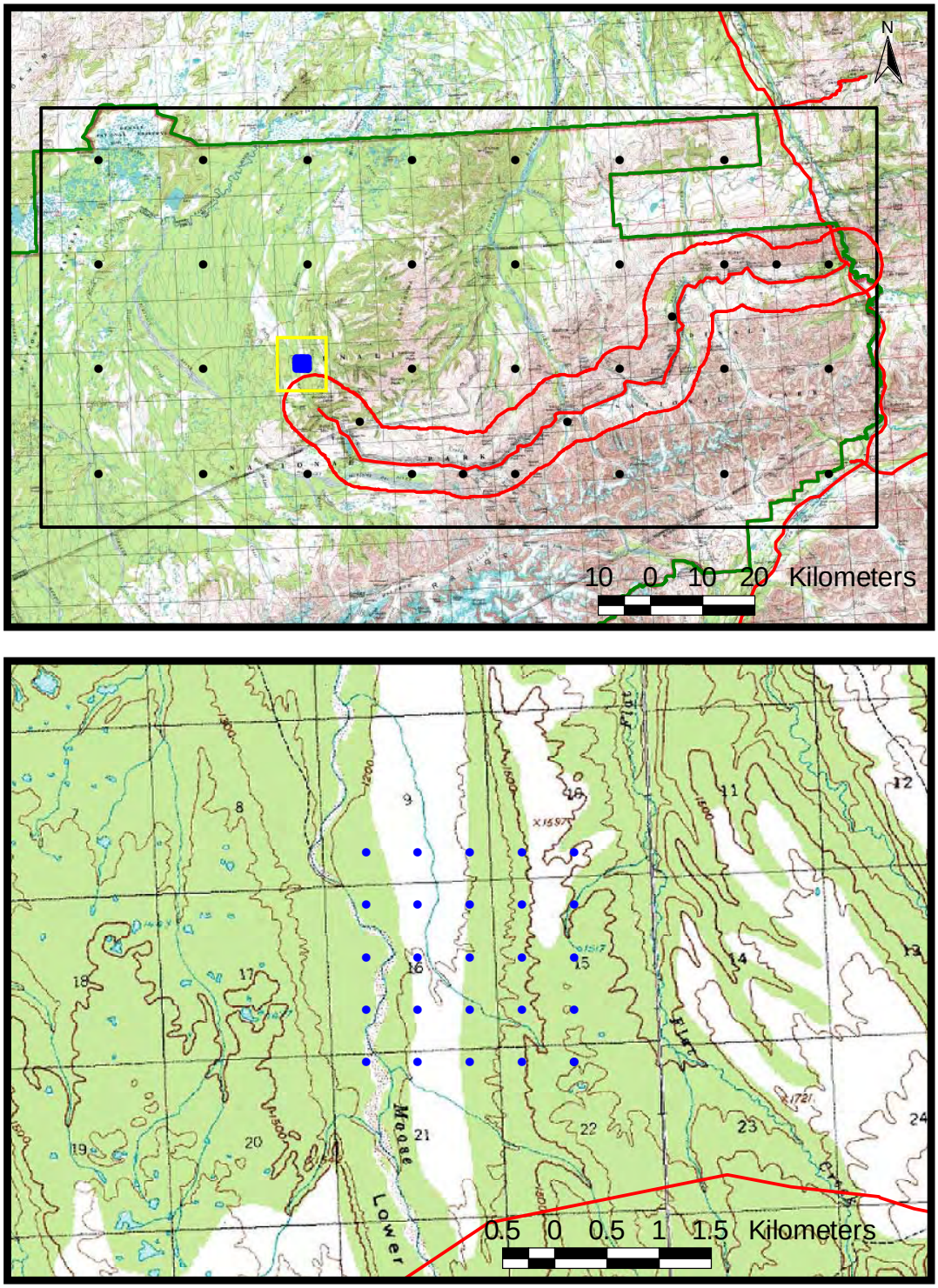

Figure 21. Location of the Outer Moose Creek Mini-grid.

Table 22. The Middle McKinley River mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Middle McKinley River
10 km point ID #	187
USGS quadrangle	MT MCKINLEY C-3
Lat/Long of SE corner (point #1)	63.6140619 N, -151.4204897 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early or late season
Maximum topographic relief	Flat
Water source for crew	Multiple streams in grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Stream crossings may present a difficulty, so may tall shrub vegetation if it is a closed canopy.
Any additional logistical support required?	No

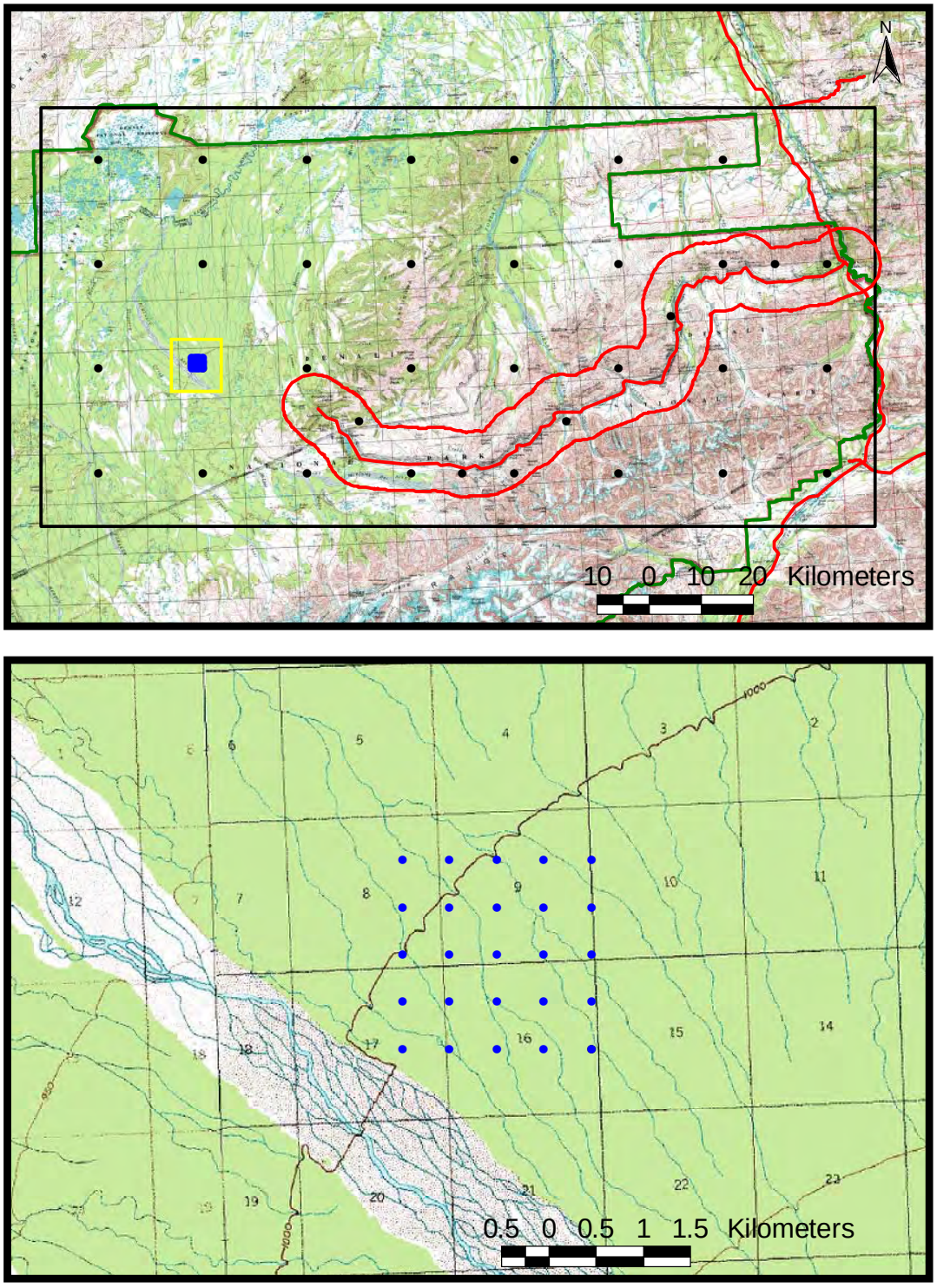

Figure 22. Location of the Middle McKinley River Mini-grid.

Table 23. The Middle Birch Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Middle Birch Creek
10 km point ID #	189
USGS quadrangle	MT MCKINLEY C-4
Lat/Long of SE corner (point #1)	63.6204708 N, -151.8242618 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna, DENA headquarters
Phenology category	Late Season
Maximum topographic relief	Flat
Water source for crew	Streams and ponds within grid
Potential camping limitations	Wetlands may be a problem
Travel or logistical concerns within mini-grid	Wetlands and ponds will make it critical for the crew to bring hip waders, rubber boots and possibly float tubes to move between points and to sample at some points
Any additional logistical support required?	Float tubes and potentially a helicopter hop from one side of the grid to the other may be helpful for finishing this grid in 10 days

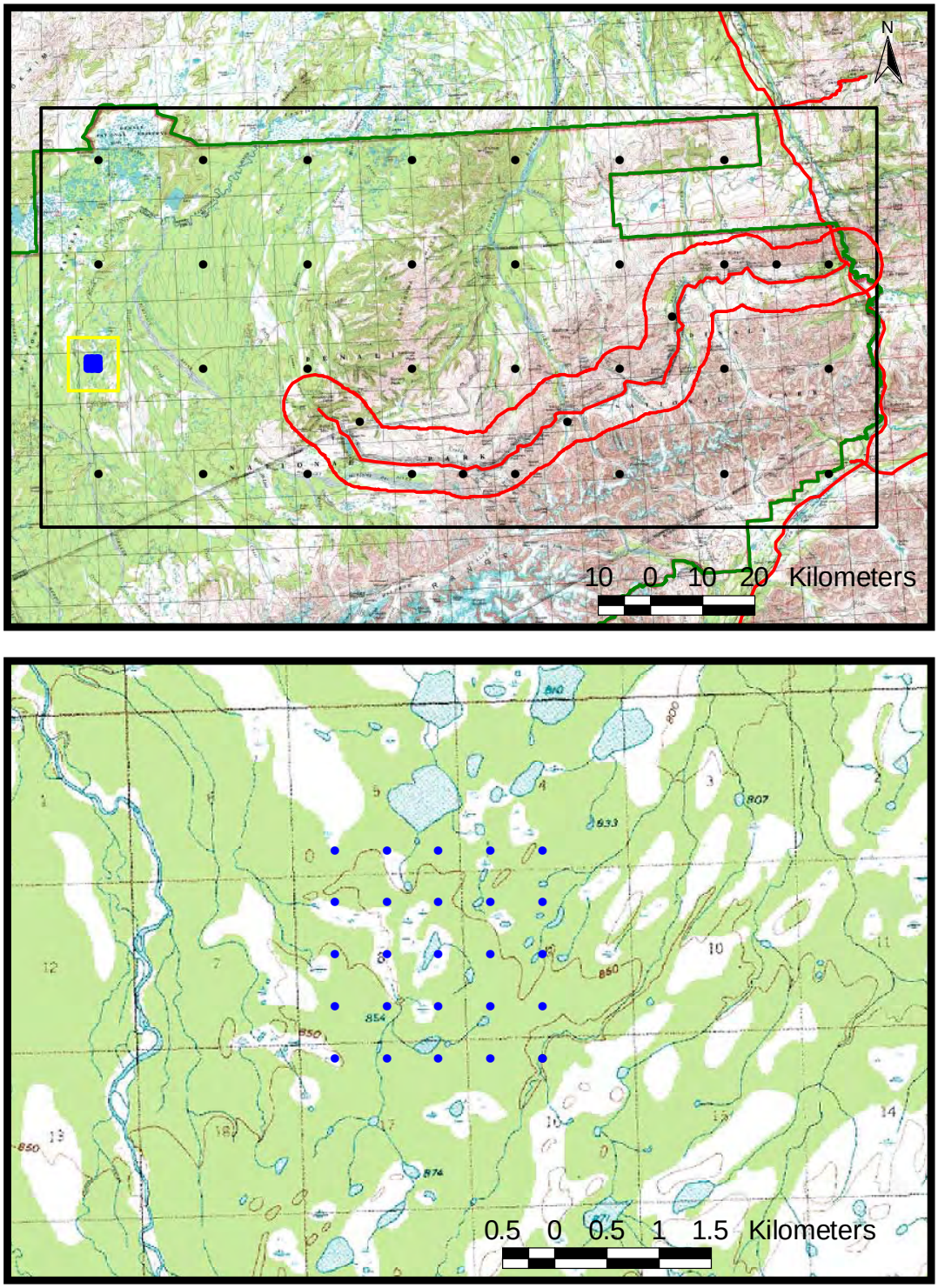

Figure 23. Location of the Middle Birch Creek Mini-grid.

Table 24. The Middle Teklanika River mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Middle Teklanika River
10 km point ID #	199
USGS quadrangle	HEALY C-6
Lat/Long of SE corner (point #1)	63.6611059 N, -149.5929274 W
Vegetation sampling schedule	2 eastern-most rows completed in 2002
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road, either at the Teklanika Campground or at the bridge
Phenology category	Early
Maximum topographic relief	183 m (600 ft)
Water source for crew	Ample water is available from the Teklanika River and Big Creek
Potential camping limitations	Camping out of view of the Road and the Teklanika River Campground is a major consideration at the east side of this grid
Travel or logistical concerns within mini-grid	Some areas in this grid are steep
Any additional logistical support required?	2 backcountry rangers to assist with carrying in field gear

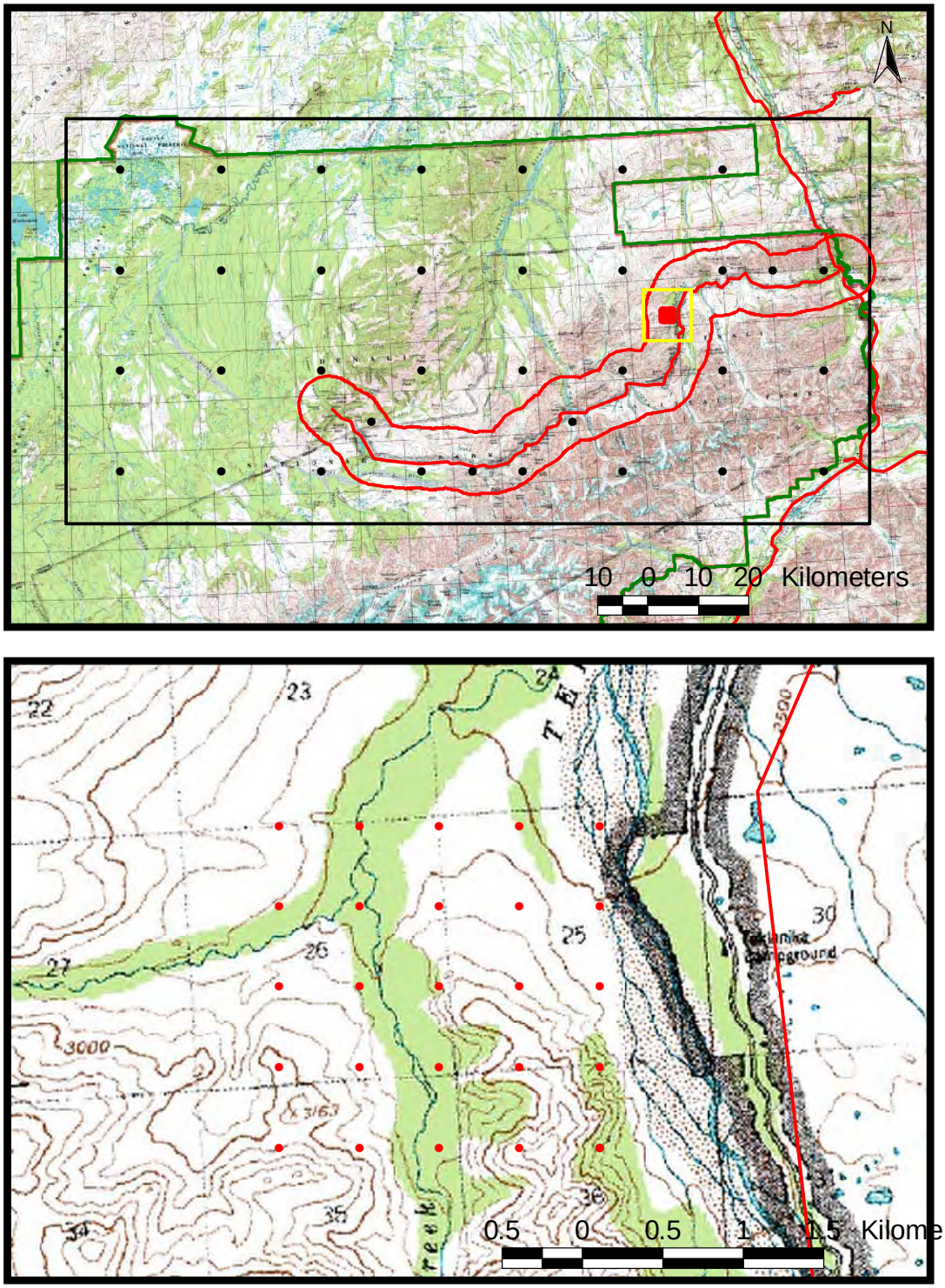

Figure 24. Location of the Middle Teklanika River Mini-grid.

Table 25. The Rock Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Rock Creek
10 km point ID #	213
USGS quadrangle	HEALY C-4
Lat/Long of SE corner (point #1)	63.7313499 N, -148.9724057 W
Vegetation sampling schedule	Sampled in 2000 and 2004
Sampling category	20 km sampling window – permanent sample
Possible access methods	Hike in
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Early season
Maximum topographic relief	549 m (1800 ft)
Water source for crew	Can bring own since this grid is sampled best by day trips; or else get water from Rock Creek
Potential camping limitations	Camping is not necessary except maybe for highest points, in which case, staying out of view of the Park Road is important
Travel or logistical concerns within mini-grid	Hiking is steep but does not pose a large problem. Moving east to west in the grid is difficult because of the steep topography and dense alder thickets
Any additional logistical support required?	No

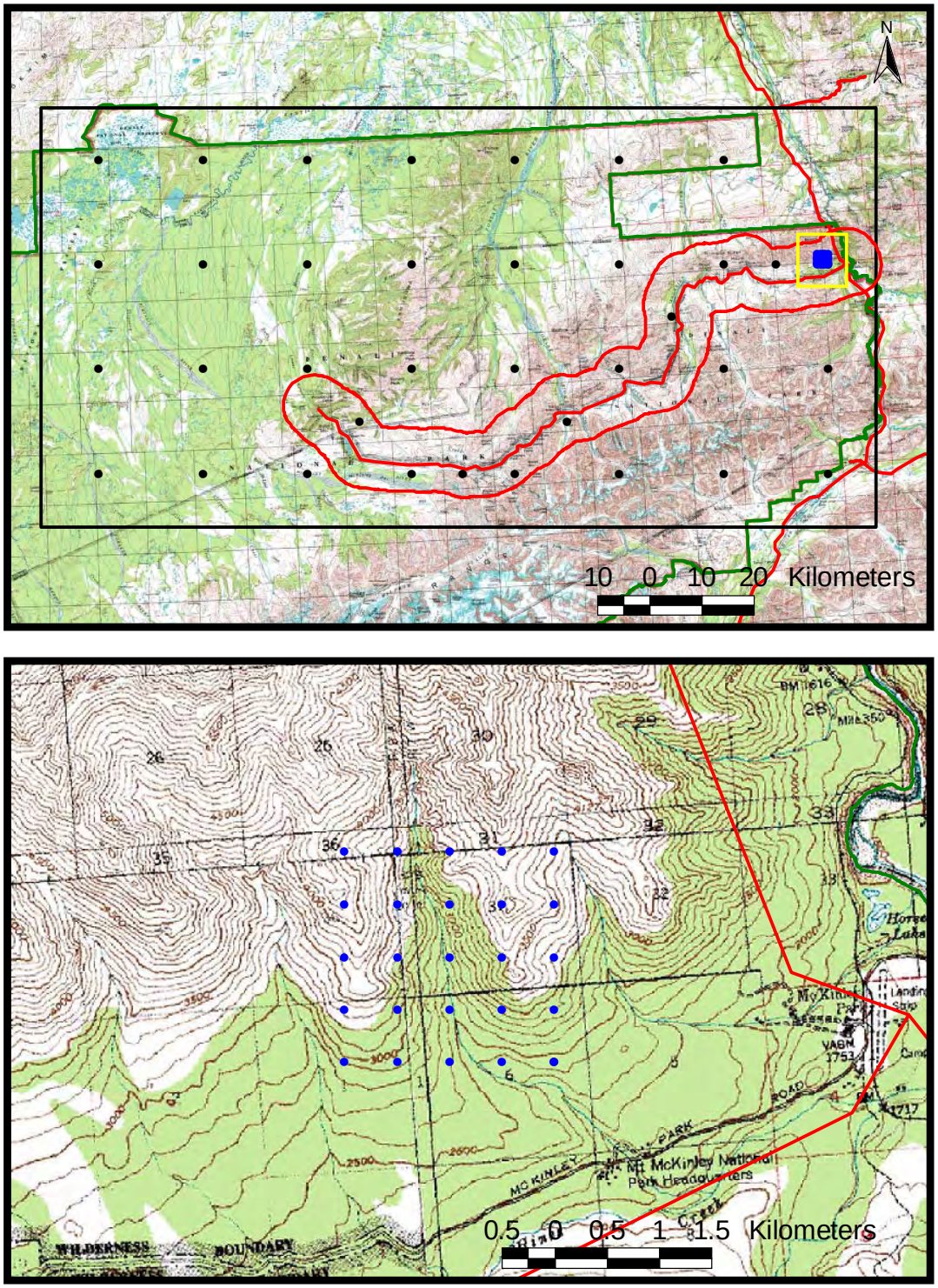

Figure 25. Location of the Rock Creek Mini-grid.

Table 26. The Mt. Healy Ridge mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Mt Healy Ridge
10 km point ID #	214
USGS quadrangle	HEALY C-5
Lat/Long of SE corner (point #1)	63.7379857 N, -149.1746721
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Mid- season, high elevation
Maximum topographic relief	610 m (200 ft)
Water source for crew	Small streams in grid, or may have to hike a ways to get access to water
Potential camping limitations	Parts of this grid are steep and the terrain varies from 4000- 6000 ft elevation. The grid is on the southward slopes that face the road, and the combination of these two factors may reduce the potential areas for camping locations
Travel or logistical concerns within mini-grid	Parts of this grid are steep and in conjunction with high elevation, crew members will need to keep safety in mind. The elevational gradient will also lengthen travel times between points in the grid
Any additional logistical support required?	2 backcountry rangers to assist with carrying field gear to the grid

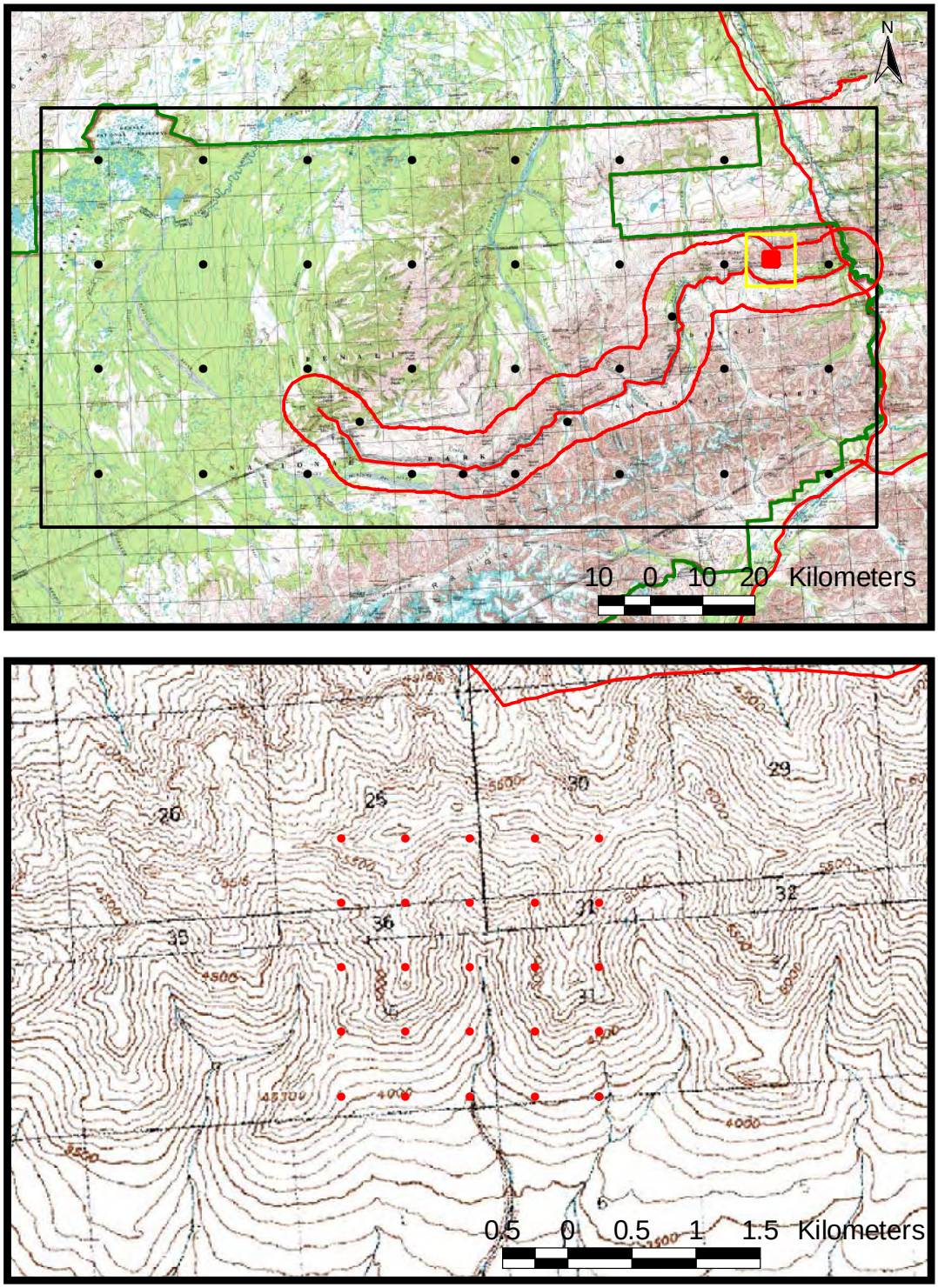

Figure 26. Location of the Mt. Healy Ridge Mini-grid.

Table 27. The Primrose Ridge mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Primrose Ridge
10 km point ID #	215
USGS quadrangle	HEALY C-5
Lat/Long of SE corner (point #1)	63.7443495 N, -149.3770283 W
Vegetation sampling schedule	Sampled 2001/2004
Sampling category	20 km sampling window – permanent sample
Possible access methods	Hike in from road
Access point (any numbers correspond with possible access methods)	DENA Park Road
Phenology category	Mid-Season
Maximum topographic relief	366 m (1200 ft)
Water source for crew	Some wet seeps on ridge but crew should bring their own water
Potential camping limitations	Must stay out of view of road, a consideration on the southern part of grid
Travel or logistical concerns within mini-grid	Steep in some areas but not prohibitively so
Any additional logistical support required?	2-3 volunteer backcountry rangers to assist in transporting gear and supplies to the grid from the road and back

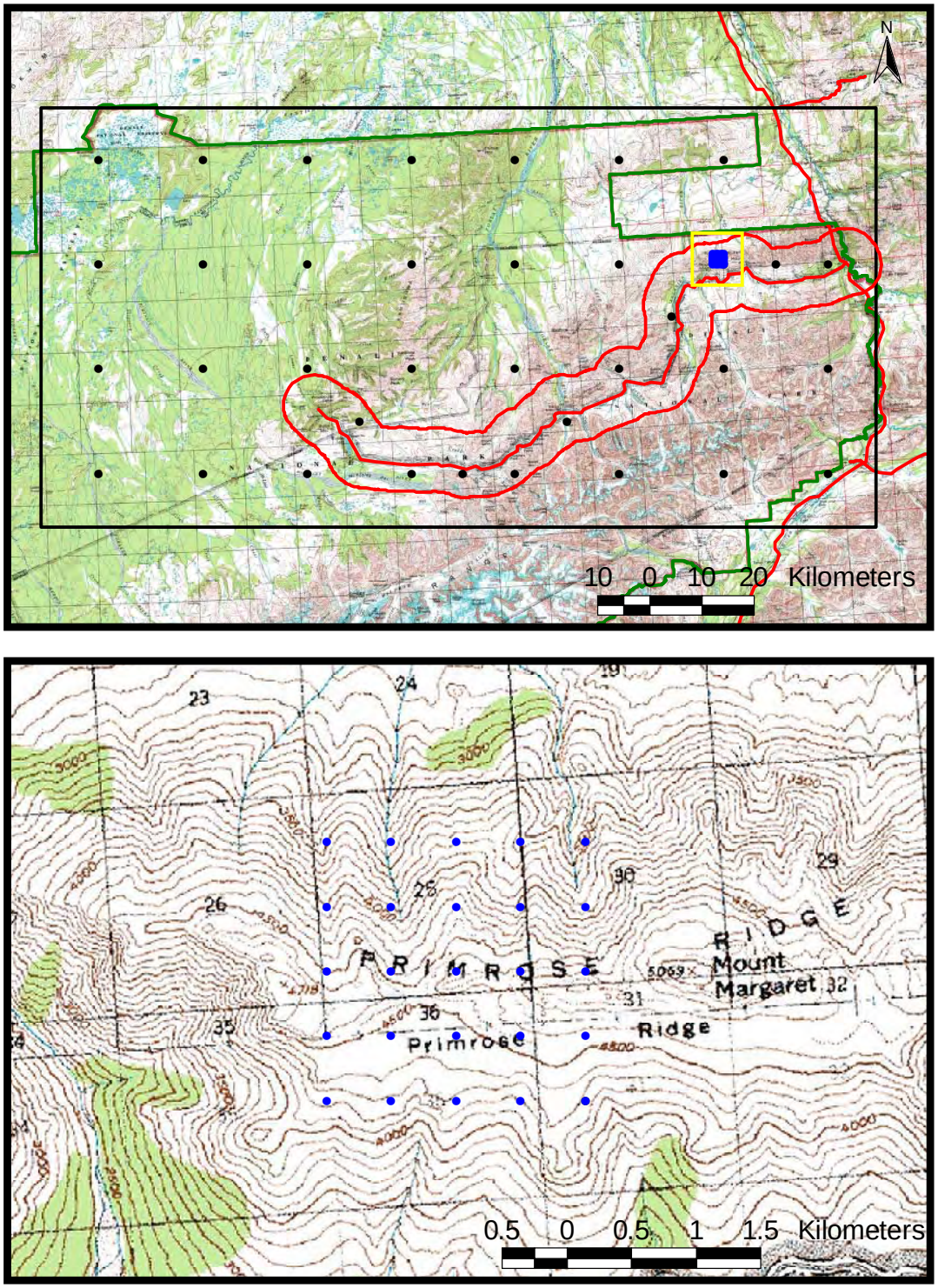

Figure 27. Location of the Primrose Ridge Mini-grid.

Table 28. The Nika Ridge mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Nika Ridge
10 km point ID #	216
USGS quadrangle	HEALY D-6
Lat/Long of SE corner (point #1)	63.7504411 N, -149.5794705 W
Vegetation sampling schedule	
Sampling category	Road_Corridor_intensive
Possible access methods	Walk
Access point (any numbers correspond with possible access methods)	Denali Park Road
Phenology category	Mid season
Maximum topographic relief	325 m (1100 ft)
Water source for crew	There is a creek in the western and northern part of the grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	None
Any additional logistical support required?	Backcountry rangers to assist with carrying gear into this grid, as it is a 1700 ft gain in elevation (involves crossing a 4000 ft ridge to access the site) and includes crossing the Teklanika River

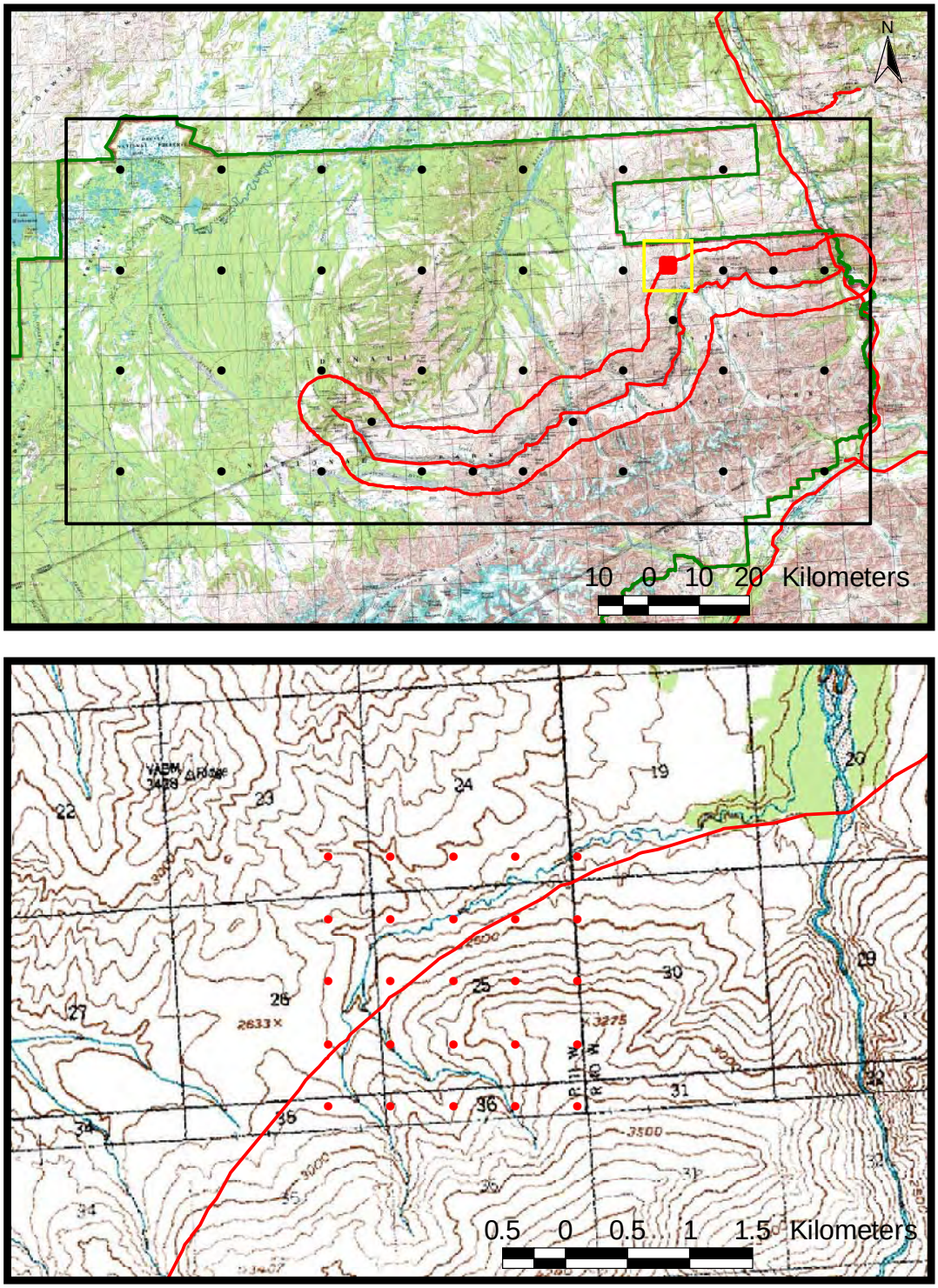

Figure 28. Location of the Nika Ridge Mini-grid.

Table 29. The Upper Sushana mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Upper Sushana
10 km point ID #	217
USGS quadrangle	HEALY D-6
Lat/Long of SE corner (point #1)	63.7562603 N, -149.7819951 W
Vegetation sampling schedule	Sampled in 2004
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Early- mid season
Maximum topographic relief	152 m (500 ft)
Water source for crew	2 creeks within grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	None
Any additional logistical support required?	No

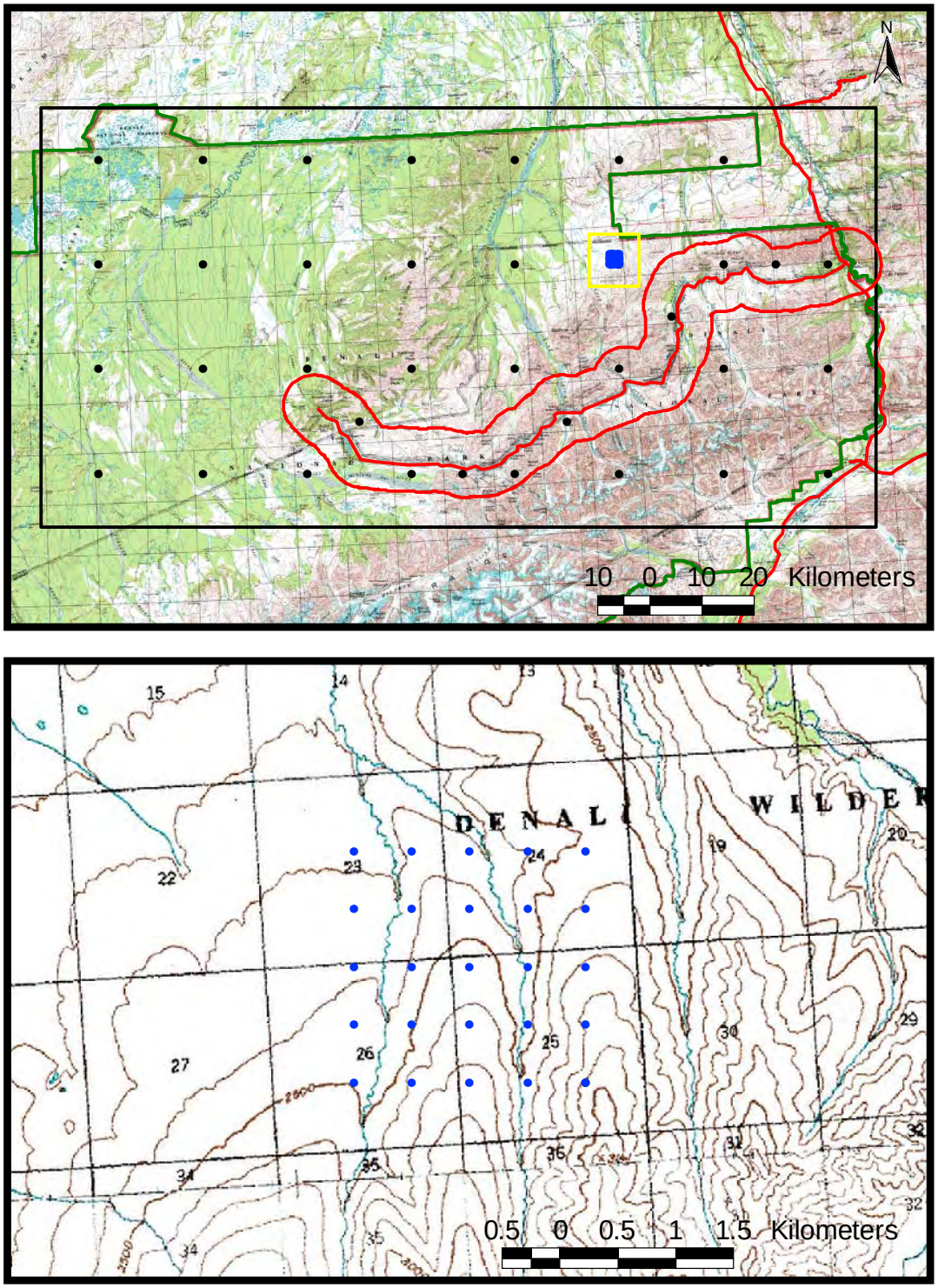

Figure 29. Location of the Upper Sushana Mini-grid.

Table 30. The East Toklat mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	East Toklat
10 km point ID #	219
USGS quadrangle	MT MCKINLEY D-1
Lat/Long of SE corner (point #1)	63.7670812 N, -150.1872761 W
Vegetation sampling schedule	Sampled in 2002
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Mid/ late season
Maximum topographic relief	91 m (300 ft)
Water source for crew	Pond and streams within grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Wetlands/lowland terrain may make travel difficult, especially if it is densely shrubby
Any additional logistical support required?	No

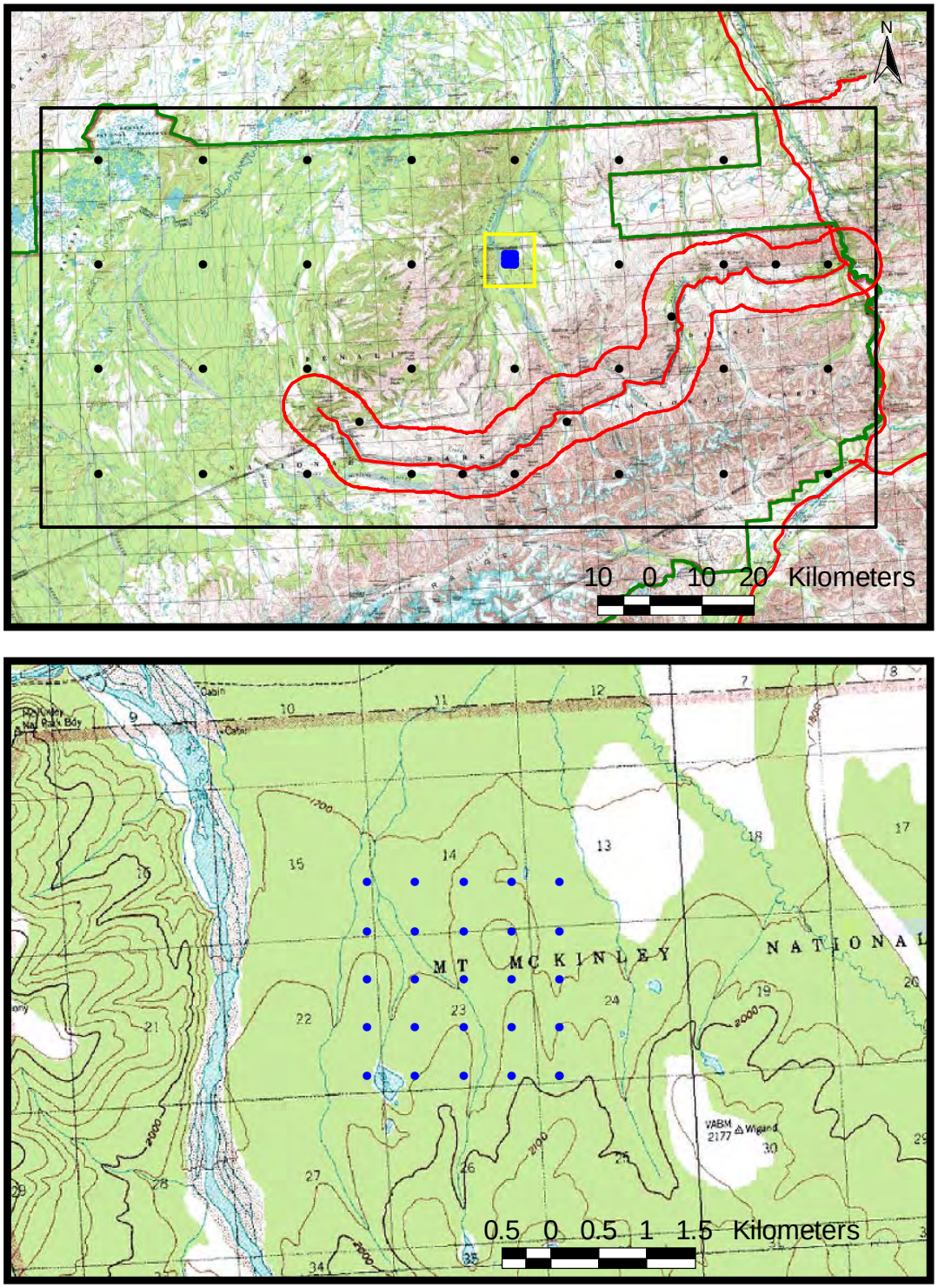

Figure 30. Location of the East Toklat Mini-grid.

Table 31. The Bearpaw River mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Bearpaw River Headwaters
10 km point ID #	221
USGS quadrangle	MT MCKINLEY D-2
Lat/Long of SE corner (point #1)	63.7768107 N, -150.5928417 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Fixed wing into the Crooked Creek Landing Strip or Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early- mid season
Maximum topographic relief	304 m (1000 ft)
Water source for crew	Two creeks near grid, crew should consider bringing their own water supply
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Hiking will be over moderately steep terrain but no difficulties are anticipated
Any additional logistical support required?	No

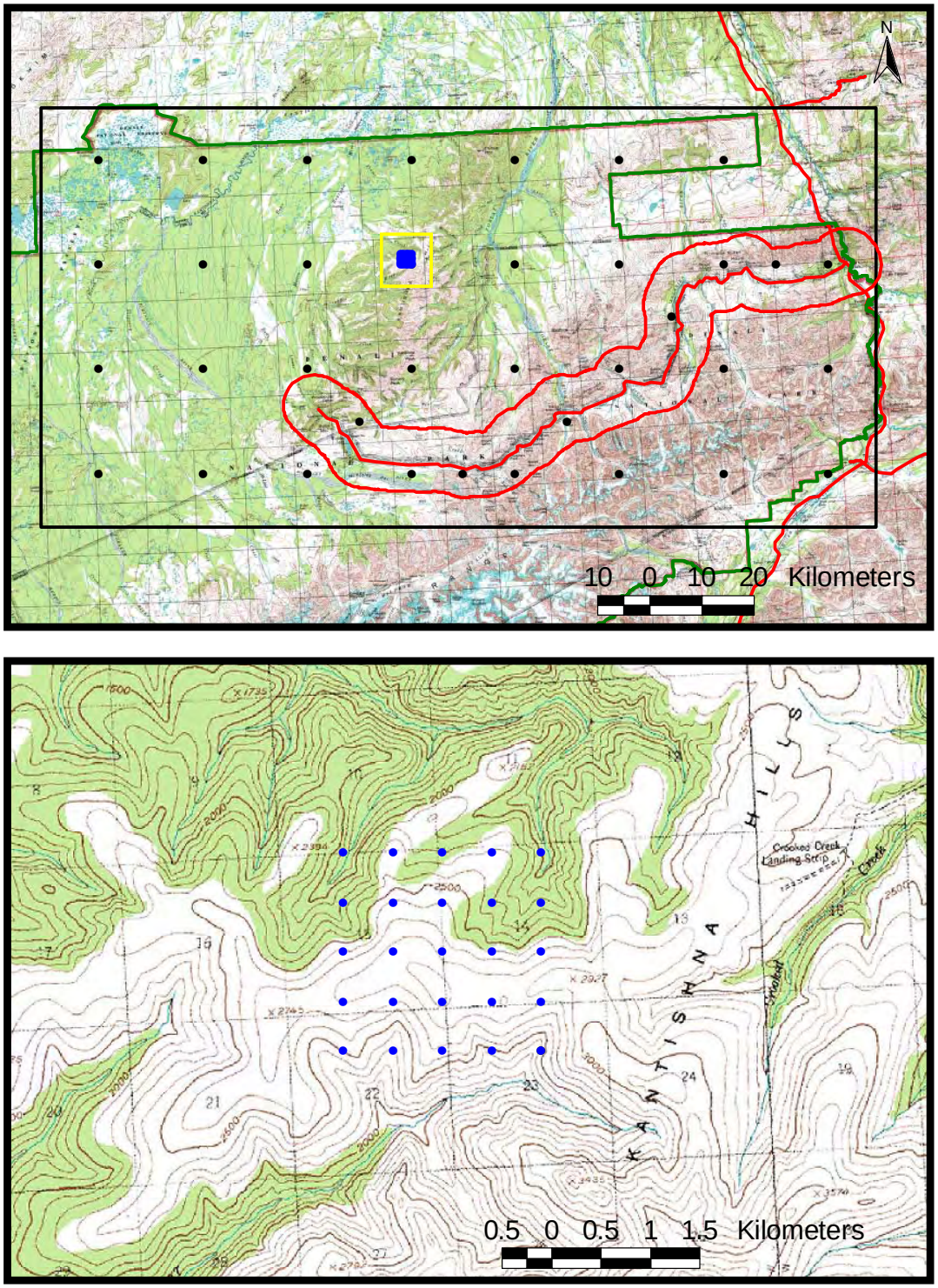

Figure 31. Location of the Bearpaw River Headwaters Mini-grid.

Table 32. The Middle Moose Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Middle Moose Creek
10 km point ID #	223
USGS quadrangle	MT MCKINLEY D-2
Lat/Long of SE corner (point #1)	63.7854478 N, -150.9986618W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early/ mid season
Maximum topographic relief	30 m (100 ft)
Water source for crew	Small streams in grid, crew may need to bring their own water supply
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Grid may have dense shrub cover which may render travel difficult
Any additional logistical support required?	No

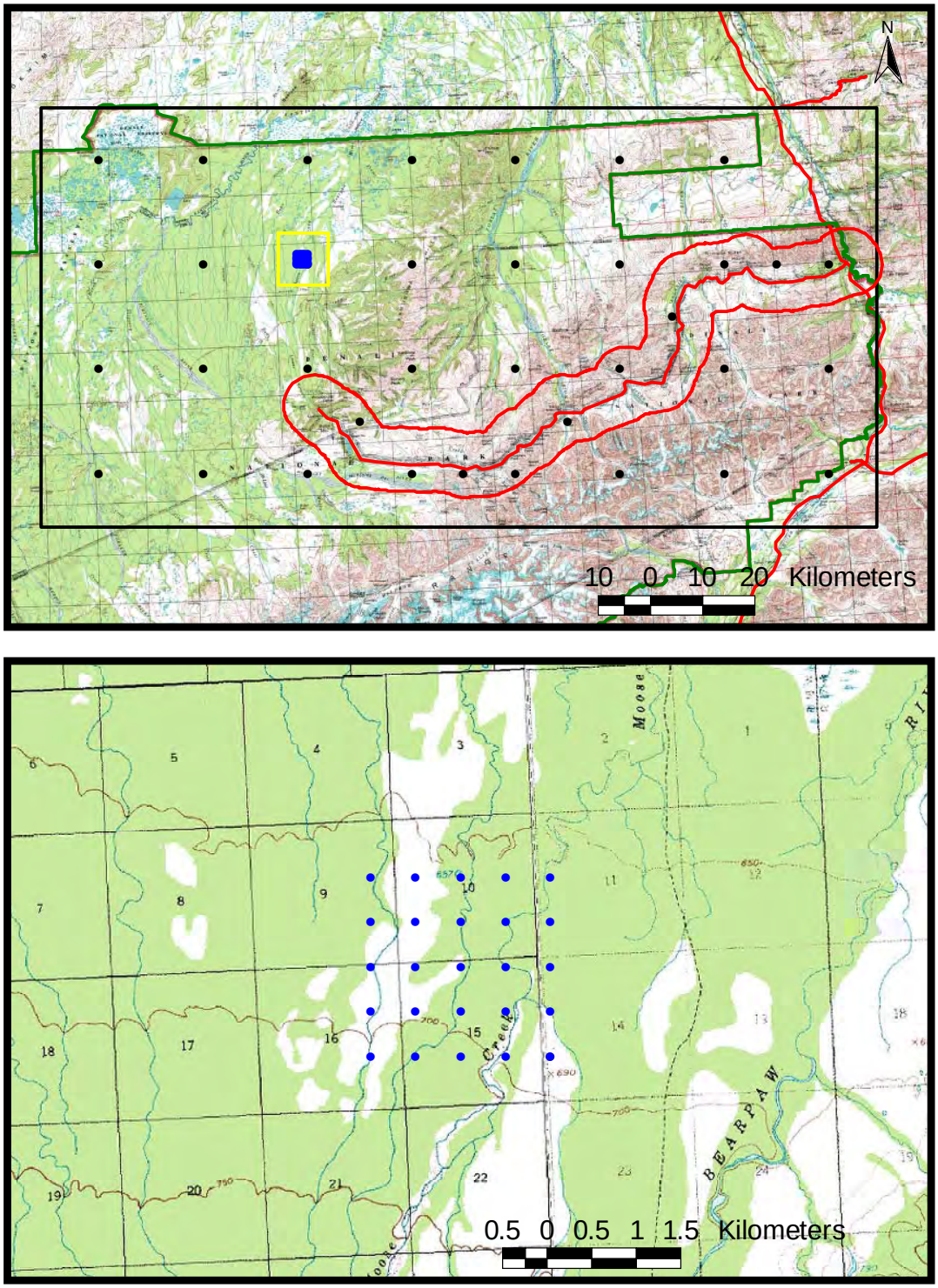

Figure 32. Location of the Middle Moose Creek Mini-grid.

Table 33. The McKinley River Delta mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	McKinley River Delta
10 km point ID #	225
USGS quadrangle	MT MCKINLEY D-3
Lat/Long of SE corner (point #1)	63.7929914 N, -151.4047063 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Early- mid season
Maximum topographic relief	15 m (50 ft)
Water source for crew	2 creeks within grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Grid may be densely covered in shrubs, which could make travel difficult
Any additional logistical support required?	No

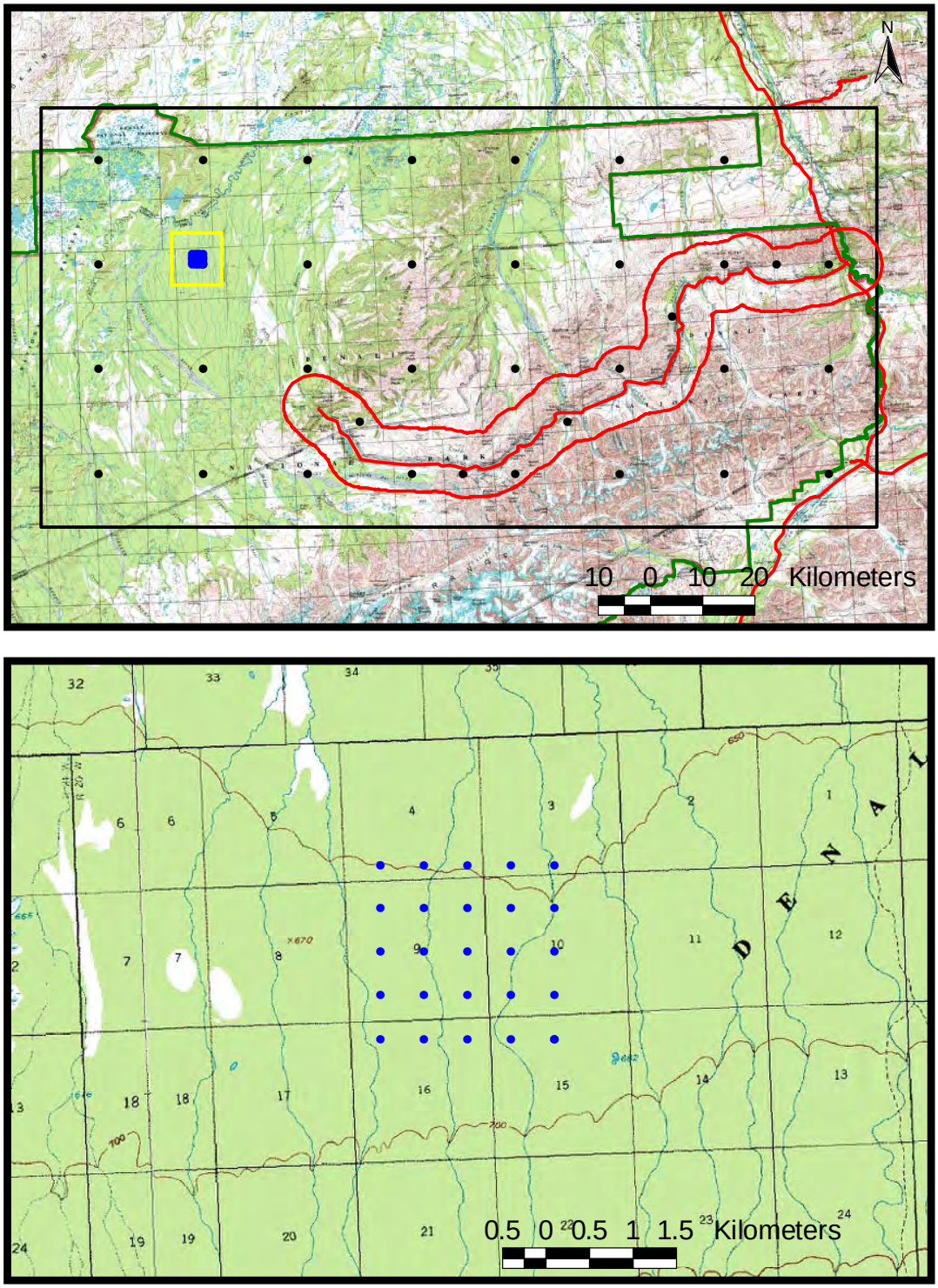

Figure 33. Location of the McKinley River Delta Mini-grid.

Table 34. The Lower Birch Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Lower Birch Creek
10 km point ID #	227
USGS quadrangle	MT MCKINLEY D-4
Lat/Long of SE corner (point #1)	63.7994408 N, -151.810945 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna or DENA headquarters
Phenology category	Mid-season, wetland/lowlands
Maximum topographic relief	None- flat
Water source for crew	Copious amounts available from Birch Creek and ponds
Potential camping limitations	Wetlands may make it hard to find a dry campsite
Travel or logistical concerns within mini-grid	Considerable wetlands, ponds and a large creek will make it critical to have waders, boots and small inflatable water craft to navigate around the grid.
Any additional logistical support required?	Small inflatable watercraft may be critical to cross Birch Creek and access ponds, additionally, a mid-trip hop by helicopter across the grid may be helpful

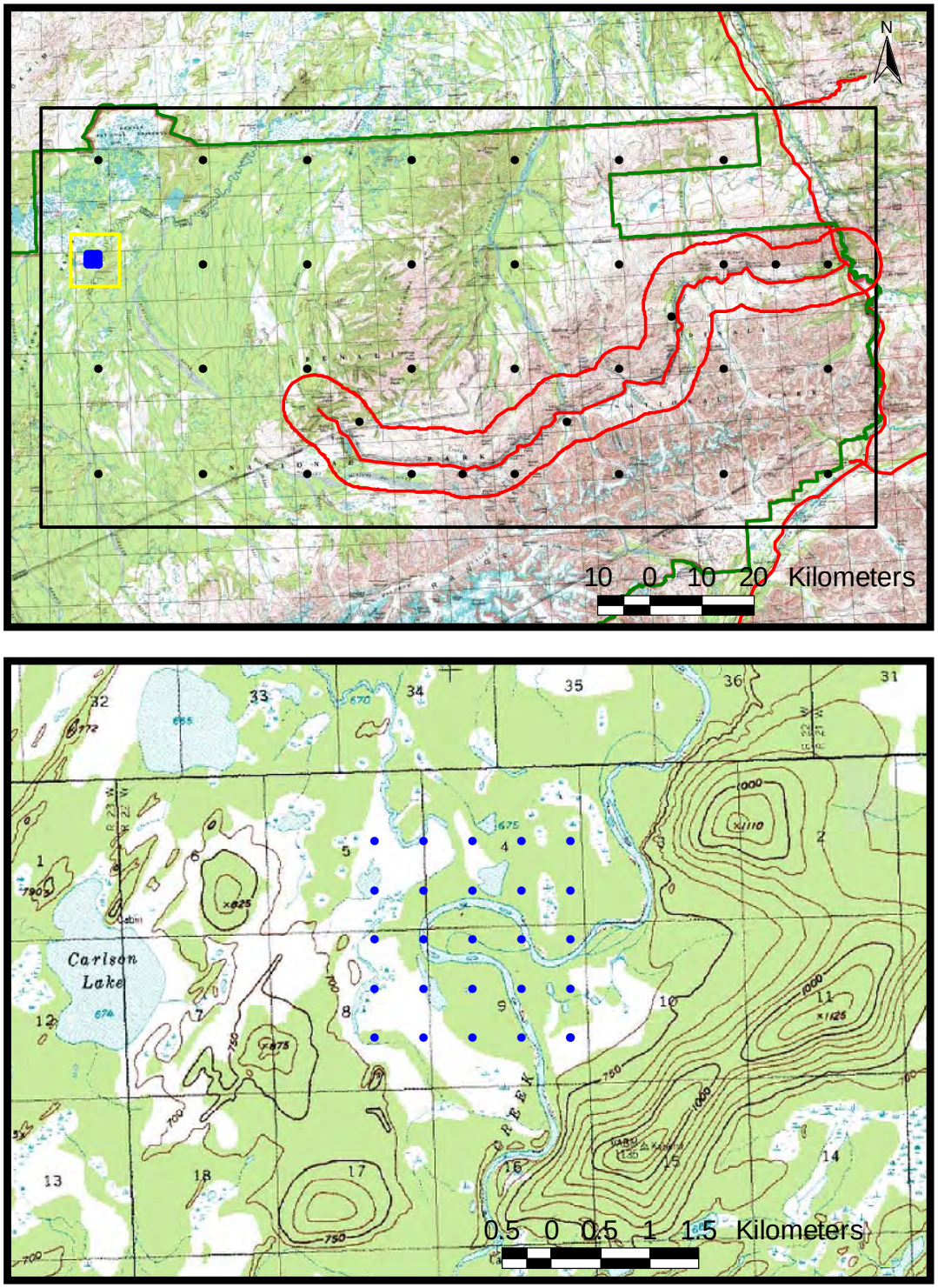

Figure 34. Location of the Lower Birch Creek Mini-grid.

Table 35. The Fish Creek Ridge mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Fish Creek Ridge
10 km point ID #	241
USGS quadrangle	HEALY D-5
Lat/Long of SE corner (point #1)	63.9230037 N, -149.3486309 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Early, S-facing scrub
Maximum topographic relief	183 m (600 ft)
Water source for crew	Stream in NW part of grid, crew should bring their water supply with them
Potential camping limitations	None
Travel or logistical concerns within mini-grid	None
Any additional logistical support required?	No

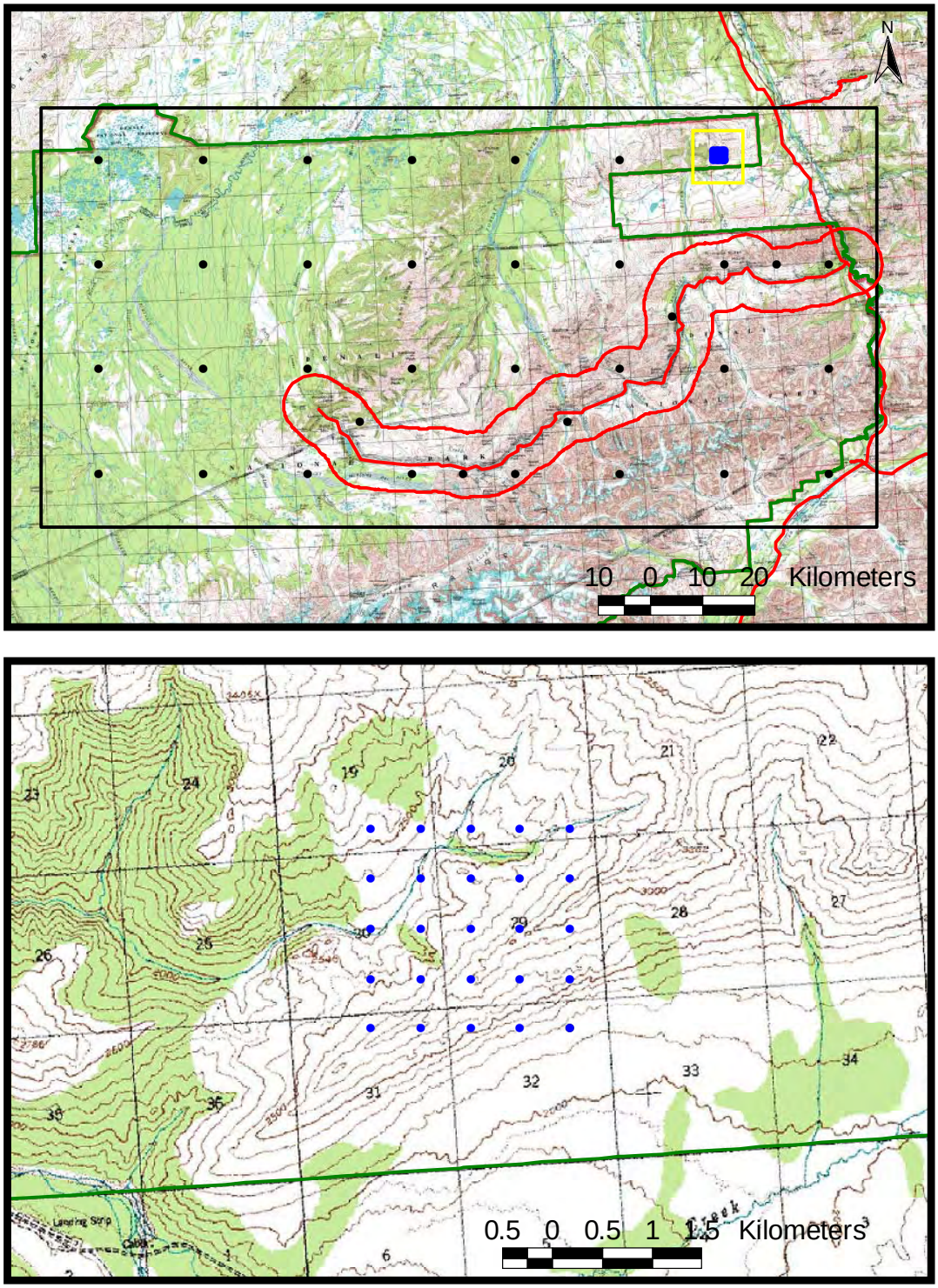

Figure 35. Location of the Fish Creek Mini-grid.

Table 36. The East Sushana mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	East Sushana
10 km point ID #	243
USGS quadrangle	HEALY D-6
Lat/Long of SE corner (point #1)	63.9349901 N, -149.7560711 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Mid- season
Maximum topographic relief	244 m (800 ft)
Water source for crew	There are a couple streams within the grid
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Tussock- dominated terrain may hinder travel to a minor degree
Any additional logistical support required?	No

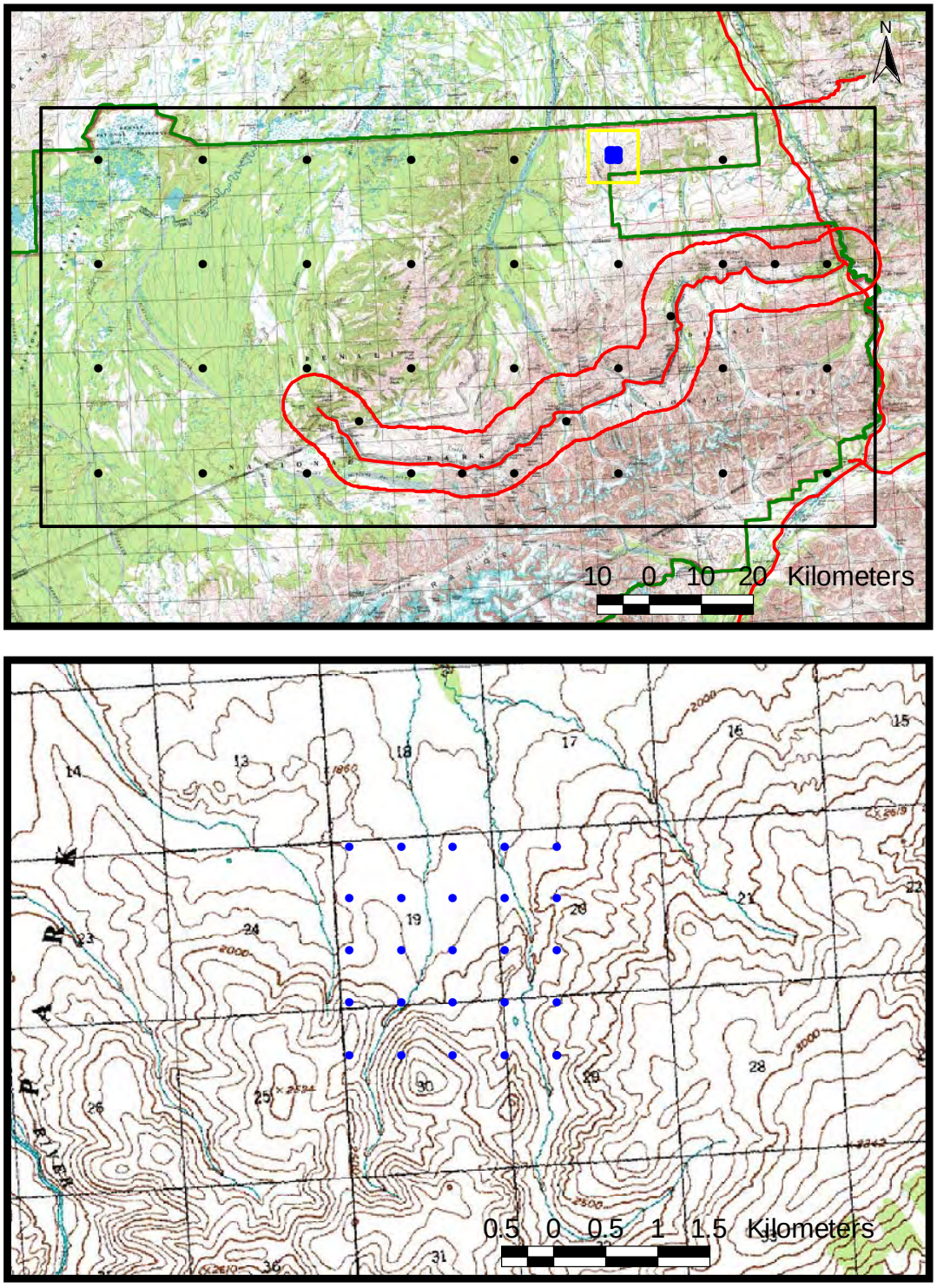

Figure 36. Location of the East Sushana Mini-grid.

Table 37. The East Chitsia mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	East Chitsia
10 km point ID #	245
USGS quadrangle	MT MCKINLEY D-1
Lat/Long of SE corner (point #1)	63.9458795 N, -150.1638314 W
Vegetation sampling schedule	Measured in 2002/2004
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	DENA headquarters
Phenology category	Early to Mid Season
Maximum topographic relief	305 m (1000 ft)
Water source for crew	There is one stream in the East part of the grid, but crew should consider bringing a water supply with them
Potential camping limitations	None, can camp on the ridges
Travel or logistical concerns within mini-grid	Copious alder shrubs and steep slopes make maneuvering among points in this mini-grid very difficult
Any additional logistical support required?	No.

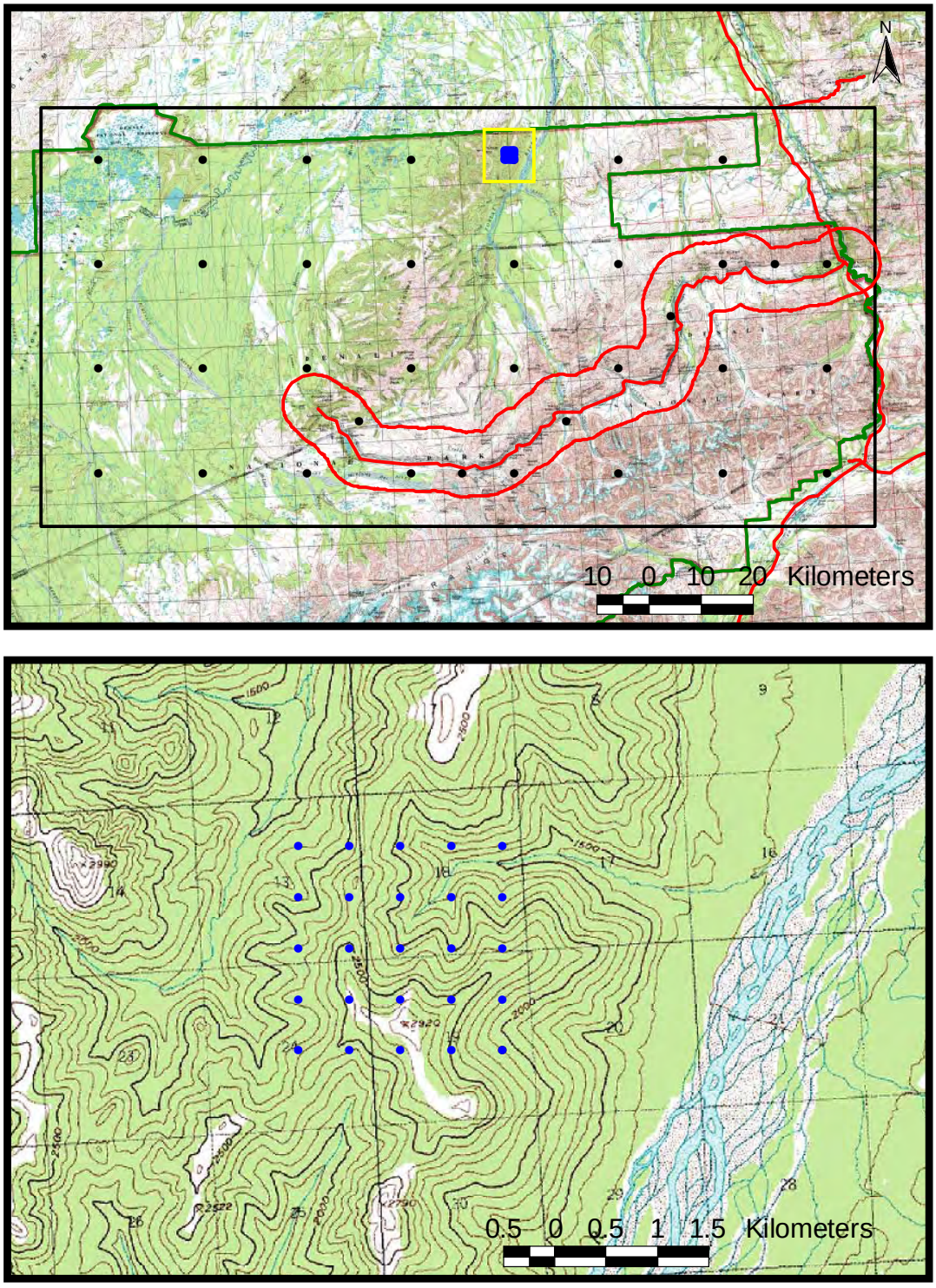

Figure 37. Location of the East Chitsia Mini-grid.

Table 38. The Sandless Lake mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Sandless Lake
10 km point ID #	247
USGS quadrangle	MT MCKINLEY D-2
Lat/Long of SE corner (point #1)	63.9556708 N, -150.5718814 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna, DENA headquarters
Phenology category	Mid/late aquatic and wetlands
Maximum topographic relief	0 m – flat
Water source for crew	Plenty of water available at the field site
Potential camping limitations	Wetlands throughout entire grid may limit camping possibilities
Travel or logistical concerns within mini-grid	Numerous pond, stream and wetland crossings in the grid, therefore rubber boots, hip waders, and inflatable boats are necessary for travel within the grid
Any additional logistical support required?	Small inflatable craft required to get to some points

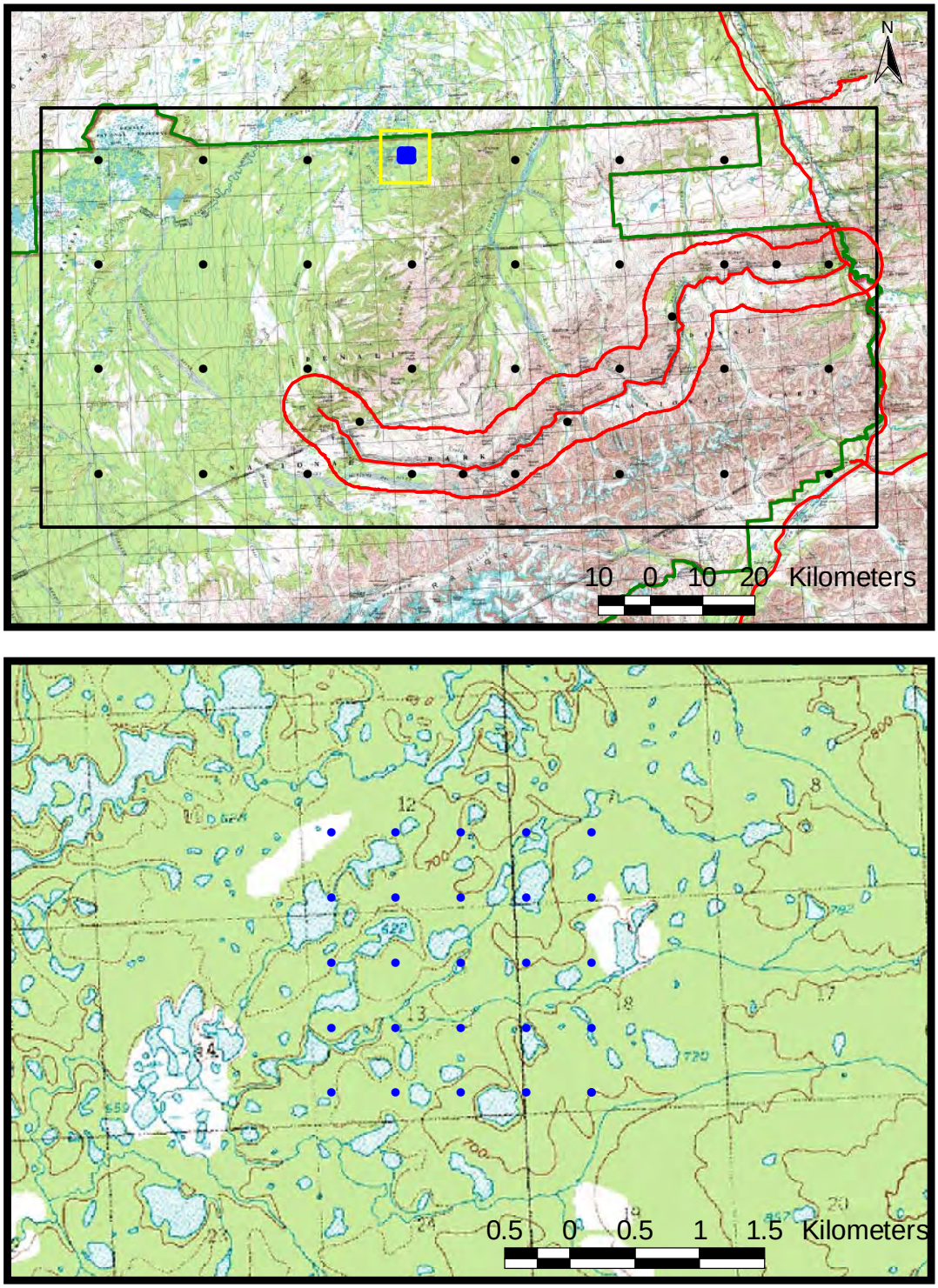

Figure 38. Location of the Sandless Lake Mini-grid.

Table 39. The Bear Creek mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Bear Creek
10 km point ID #	249
USGS quadrangle	MT MCKINLEY D-2
Lat/Long of SE corner (point #1)	63.9643627 N, -150.9801907 W
Vegetation sampling schedule	
Sampling category	20 km sampling window - permanent sample
Possible access methods	1. Helicopter 2. Float plane if ponds are big enough
Access point (any numbers correspond with possible access methods)	1. Kantishna or DENA HQ 2. Fairbanks float pond, or Lake Minchumina
Phenology category	Mid/Late – aquatics and wetlands
Maximum topographic relief	Flat
Water source for crew	Plenty of water available
Potential camping limitations	Wetlands
Travel or logistical concerns within mini-grid	Numerous ponds and lakes in grid; grid is mostly wetlands. Rubber boots, hip waders, and small inflatable boats necessary for successful travel within the grid
Any additional logistical support required?	A helicopter transfer within the grid mid-trip may be helpful in completing the grid within 10 days

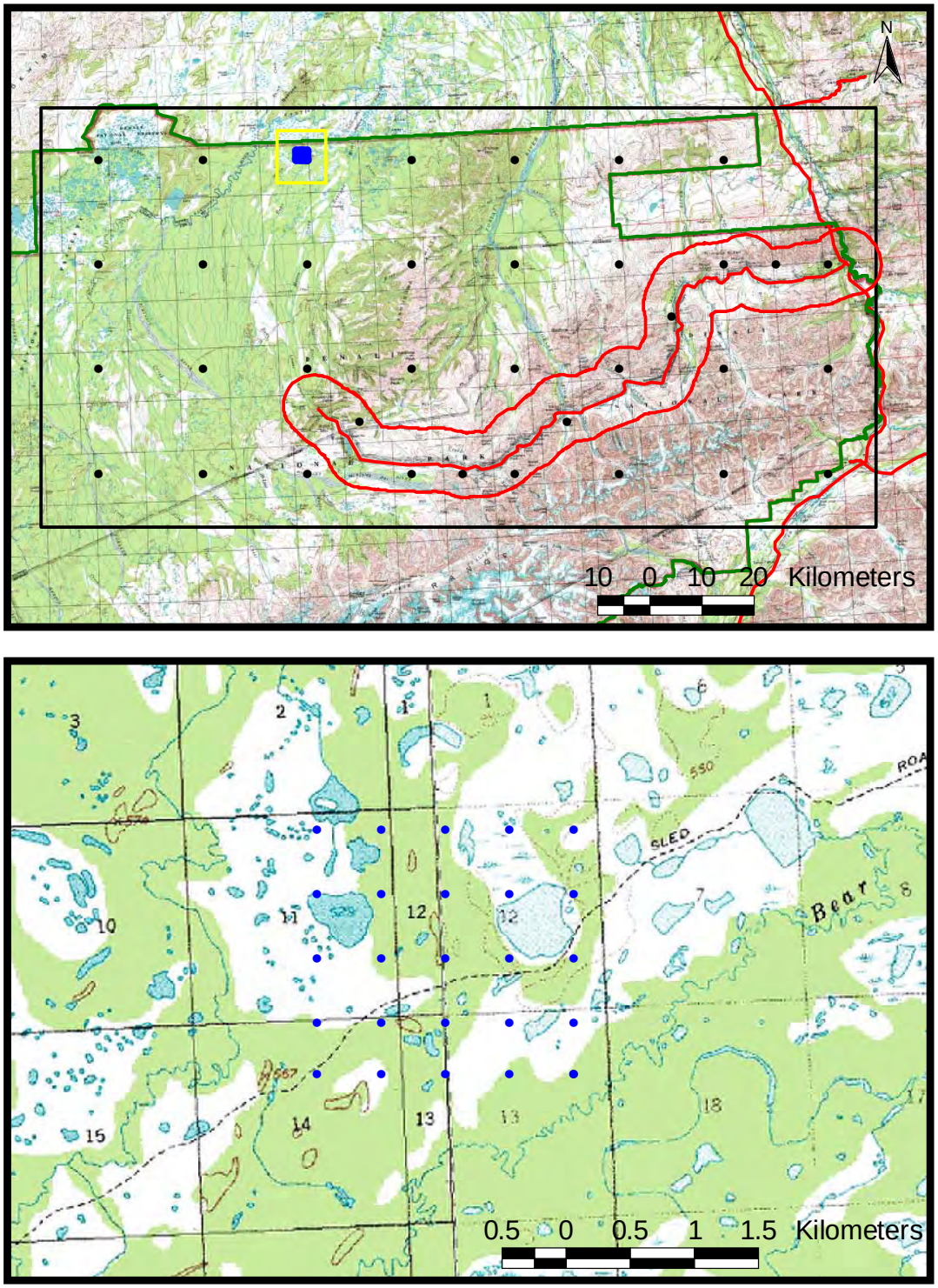

Figure 39. Location of the Bear Creek Mini-grid.

Table 40. The West Kantishna River mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	West Kantishna River
10 km point ID #	251
USGS quadrangle	MT MCKINLEY D-3
Lat/Long of SE corner (point #1)	63.9719543 N, -151.3887286 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	Helicopter
Access point (any numbers correspond with possible access methods)	Kantishna, DENA headquarters.
Phenology category	Early - s-slope forest
Maximum topographic relief	305 m (1000 ft)
Water source for crew	Couple creeks within the grid, may be easiest to bring a water supply with the helicopter.
Potential camping limitations	None
Travel or logistical concerns within mini-grid	Some areas may be fairly steep. Using a helicopter relocate the crew mid-trip may facilitate travel to points within this grid.
Any additional logistical support required?	No.

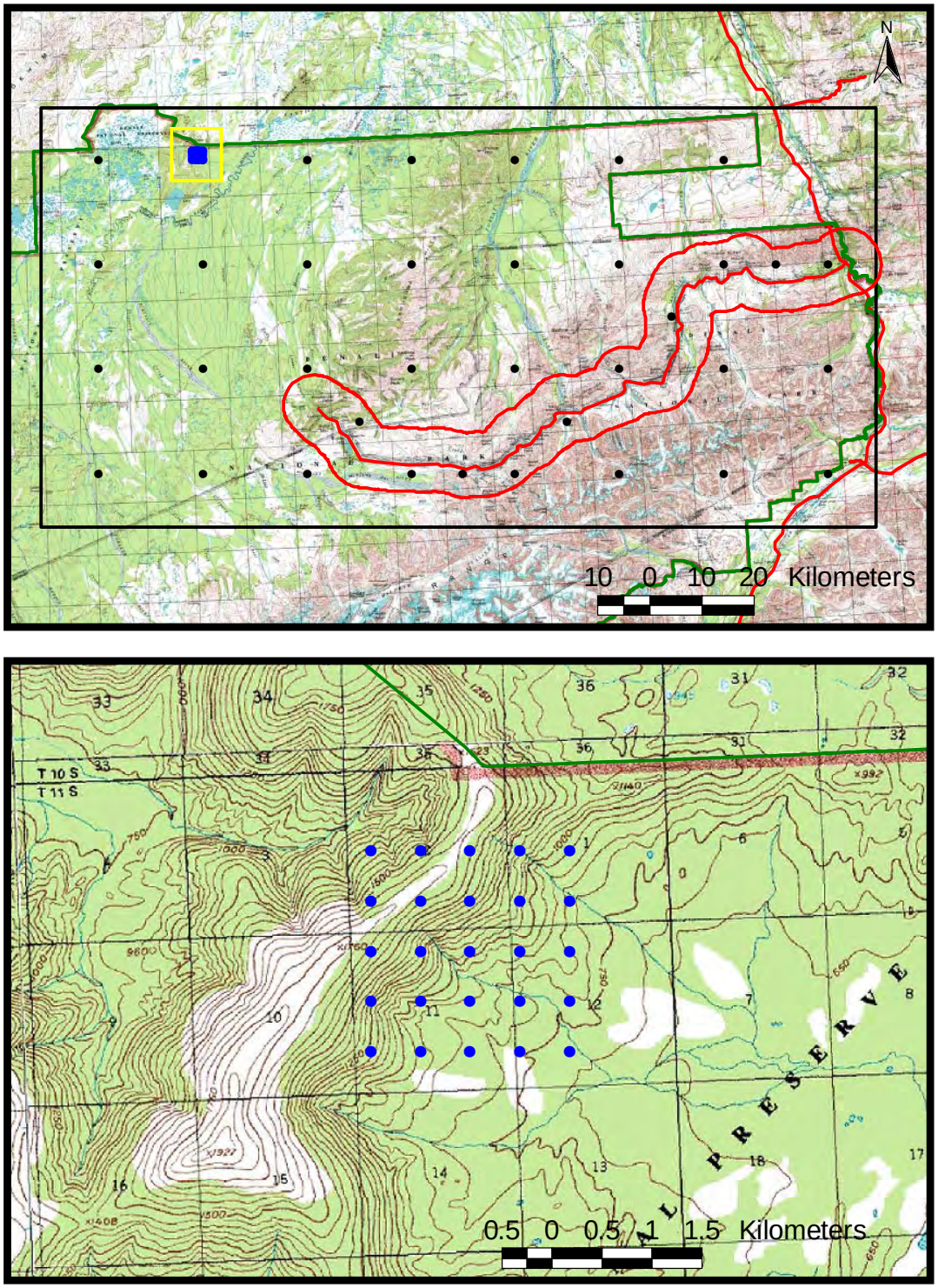

Figure 40. Location of the West Kantishna River Mini-grid.

Table 41. The Beaver Log Lake mini-grid for the permanent monitoring program in Denali National Park and Preserve.

Mini-grid name	Beaver Log Lake
10 km point ID #	253
USGS quadrangle	MT MCKINLEY D-4
Lat/Long of SE corner (point #1)	63.9784446 N, -151.7974643 W
Vegetation sampling schedule	
Sampling category	20 km sampling window – permanent sample
Possible access methods	1) Float in from Lake Minchumina? 2) Fly in with float plane 3) Helicopter
Access point (any numbers correspond with possible access methods)	1) Lake Minchumina 2) Fairbanks float pond, Lake Minchumina 3) Kantishna
Phenology category	Mid- late- season due to wetlands & aquatics
Maximum topographic relief	450 ft
Water source for crew	Copious fresh water available
Potential camping limitations	Wetlands sloping terrain in NW corner
Travel or logistical concerns within mini-grid	Numerous lake and a river crossing may be necessary – considerable lowland wetland vegetation to cross. Rubber boots, hip waders, and small inflatable boats necessary for successful intra-grid travel to access points. Small, steep hill occupies NQ corner of mini-grid study area.
Any additional logistical support required?	Small inflatable craft required for river crossings.

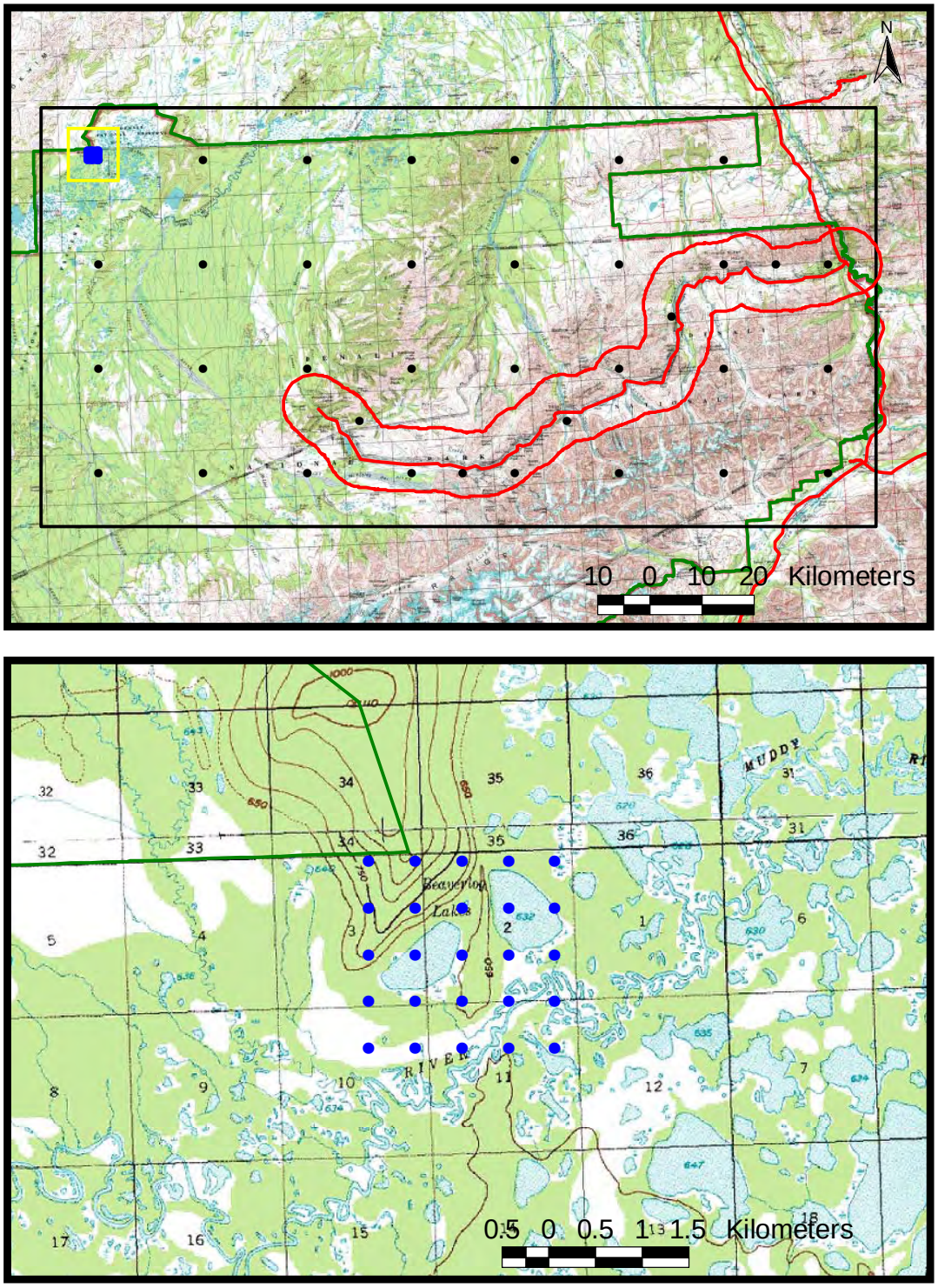

Figure 41. Location of the Beaver Log Lake Mini-grid.